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## *Investigations Covering the Microstructure of*

# Carbon Black Treads

IN a paper read February 25, 1928, at the physical Institute of the University of Frankford (Main) Germany, H. Pohle, showed new photomicrographs of technical carbon black compounds which are likely to widen the scope of present theories on reinforcing pigments.

*Micro Breaking Test*

Pohle dissected treads of various standard make of tires into microsections and broke these under a microscope with intermittent pressure. Under such conditions the microsections split up into parallel layers .001 mm. or less in thickness resembling the fracture characteristic of mica. Examination showed that the carbon black particles are distributed in layers and that no homogeneous distribu ion exists. Pohle also observed that the particles around the edges of the sections started to migrate into the surrounding medium (molten resin) when intermittent pressure was applied.

*Procedure of Break*

It can be observed under the microscope that this break in the aggregation of layers is quite irregular. The aggregation will not break suddenly but rather in a slow continuous manner, the laminae breaking independently of each other. Pohle concludes therefrom that at the breaking point the elongation of the laminae varies. This condition is attributed to the manner of mixing and to the unequal distribution of the vulcanizing agents. It is probable that it would not be advantageous to have the elongation of all laminae uniform at the breaking point as this would tend toward simultaneous breaking which in turn would result in larger ruptures.

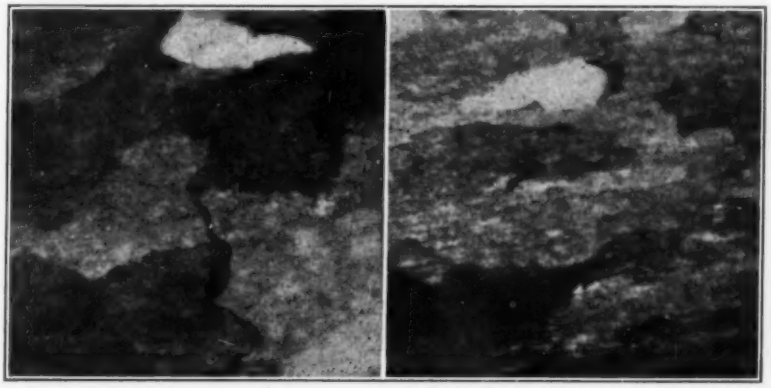
*Origin of Laminae*

For the experiment a light crepe and a crepe containing carbon black were mixed on a mill. A microscopic examination showed that a homogeneous dispersion was not obtained but instead aggregations of very fine laminae were formed. According to Pohle an aggregation of laminae is formed under all technical conditions when an active pigment, such as carbon black, is added to a highly viscous medium like rubber rotating on a mill. Small portions are homogeneously dispersed but larger portions invariably form laminae. This investigation showed that carbon black forms a very large number of layers (laminae) which remain permanently set even after vulcanization.

Due to the milling (calendering, extruding, etc.) of the compound these laminae become diffusely disordered, localizing the parallelism of the layers to comparatively very small areas. The result of this is, of course, that a break in a high grade carbon black tread is very irregular and does not proceed in any straight line. Thus a correct quantity of carbon black imparts a good structure to the rubber. A homogeneous dispersion would probably make a much less favorable break and would for that reason no doubt be practically valueless for a tread compound.

*Vulcanization of Lamellar Aggregation*

Rubber rotating on the mill is under tension. The creation of laminae happens therefore while the compound is under the influence of this tension. A highly activated compound contains therefore a rubber with a discontinuously varying latent elongation. Such a compound may have in it some layers nearer to the breaking elongation than formerly assumed. It was found that it is necessary to include this hidden elongation into the cal-



***The two photomicrographs show with a magnification of 2200 x what the laminae aggregation appears under the microscope. The microstructure and the varying carbon black content are apparent.***

culation when selecting the proper cure and accelerator. To obtain treads with long life, not showing splitting in the area of flexing, it is advisable to cure the compound in such a manner that the elongation remains as great as possible. Such compounds require less curing than compounds with a homogeneous structure.

*Stress Strain Diagram of Lamellar Aggregation*

The consequence of this hidden tension in carbon black treads is that the stress strain curve is less influenced by addition of increasing amounts of carbon black to the compound than by the addition of inactive fillers. If compounds with increased amounts of active pigments and inactive fillers are compared, the stress strain curves change according to different laws. It must be concluded therefrom that one compound with carbon black and another with fine lamp black can give the same stress strain curve in spite of the particle size being unequal. The stress strain curve of a test compound is not an adequate means for comparison of the particle size of active pigments, because in this case it is more dependent upon the quality of the structure than upon the particle size.

*Other Physical Properties Laminae Aggregation*

It is evident that internal friction and resistance against pressure must be different in a lamellar aggregation with its hidden tension, than in an almost homogeneous mix of the inactive type which during the cure had ample opportunity to regain internal equilibrium. This accounts for a higher elasticity figure when comparing the less active lamp blacks with the active carbon black. When in use highly activated compounds, with good structure, develop higher temperature. This prohibits the use of highly activated compounds in the manufacture of solid tires. Grades of black with medium particle size, between carbon black and lamp black, are advantageously used here. They give the compound more homogeneous structure than carbon black and therefore develop less heat. These grades of blacks have the same effect on solid tires as zinc oxide, namely, preventing excess heating.

*Conclusion*

In conclusion it is evident that a compound in which two rubber laminae are connected by a mutually absorbed layer of carbon black particles, must have particular properties in tensile strength and resistance to wear. It is known that such compounds show entirely different values for these properties if too small test slabs are used. Small test slabs show variation of values according to the direction. In this case the hidden tensions add in the different directions to each other and to the calender effect in a non-predictable manner.

Pohle has shown in previous researches that a compound is influenced by the addition of carbon black in a similar manner as by the addition of vulcanizing sulphur. The result of these experiments shows, however, that this analogy is complete as it is probable that during vulcanization a colloidal sulphur is formed with a particle size similar to carbon black. There is no reason, however, to assume that laminae are formed thereby as in carbon black compounds.

## Rubber-Paraffin Leather Proofing

Leather, in a new process, is waterproofed by treating it with a hot solution of rubber and paraffin. The latter is melted at about 150° F. and into it is incorporated from 5 to 50 per cent of rubber so as to form a uniform and smooth mixture which at ordinary temperature becomes a firm, waxy solid. The process dispenses with volatile solvents. Henry V. Dunham (to Van Tassel Co.). U. S. Patent No. 1,677,435, July 17, 1928.

# Applications of Water Dispersed Rubber

THE success of aqueous dispersions of rubber as a practical method in the manufacture of rubber goods is indicated by the following applications already accomplished or in process of development.

Some of the more interesting applications are as a combining cement for shoe fabrics and various other double texture materials, where the use of dispersions makes possible the elimination of dangerous solvents and the use of reclaimed rubber in the place of crude, thereby decreasing the material cost. As a material for cementing fabric to metal, the use of dispersions eliminates solvents and permits of better adhesion. In the manufacture of dipped goods they make it possible to build up the required thickness of rubber film with fewer coats, lessening the manufacturing, as well as the material cost. As an impregnating bath for twine and cords they provide a simple means of accomplishing the desired results at a minimum cost. In the field of abrasive wheels they serve as an excellent binder for the abrasive material and greatly prolong the life of the wheel. As a spread coat for single texture fabrics, such as raincoats, aprons and sheeting, they permit, in many cases, of a reduction in material cost by the use of reclaimed rubbers, give better anchorage to the fabric, eliminate the use of solvents and cut down the number of spread coats necessary, thereby effecting a reduction in cost of manufacture. As a spread coat for fabrics designed for adhesive tapes, this material insures greater adhesion and more permanency of adhesion, with a reduction in material cost. In the field of friction compounds for belting, hose, etc., the use of aqueous dispersions of rubber permits of application on lighter and less expensive machinery and greatly increases the anchorage of rubber to fabric, thereby insuring the availability of the full strength of the rubber before separation of plies. Where master batches containing high percentages of materials, such as carbon black, are desired, the process of dispersing rubber and pigment together insures a more thorough mixture and a higher pigment content than is possible through mill mixing.

These few uses for this new product give an indication as to the great possibilities before it and suggest the probability of ultimately substituting aqueous dispersions of rubber wherever rubber is now used.

## Jelutong for Chewing Gum

Increased use for jelutong, or pontianak, is forecast in the perfecting of non-oxidizing product suitable for use in making chewing gum by coagulating the latex of *Dyera costulata* or similar Bornese trees, removing the coagulum and treating it while heated with an anti-oxidizing compound, such as a phosphate, so as to thoroughly incorporate the latter in the mass and to protect it from oxidation, or retard the latter. M. L. Hamlin (assigned to Beechnut Packing Co.). U. S. Patent No. 1,674,435, June 19, 1928.

## Artificial Gutta Percha

An artificial product is said to have been produced abroad of such characteristics that it may be considered as artificial gutta percha. Tests at the Delft University indicate close agreement of its insulation resistance, dielectric capacity, dielectric losses, specific gravity and softening point with those of natural gutta percha beside being almost immune against oxidation when exposed to sun and air. This material is the invention of E. S. Ali-Cohen, The Hague.

# Rubber as a Shock Absorber

F. L. HAUSHALTER[1]

*The purpose of this article is not to study the characteristic vibrations encountered in automobile engines or in any other type of motor or prime mover but merely to show the mechanism of energy dissipation in rubber when it is used as a shock absorber in any one of its many applications.*

APPLICATIONS of rubber as a shock absorber and vibration insulator have been rapidly increasing in number in recent years. Perhaps the most successful of these have been the application of rubber tires to industrial trucks, of rubber to the ends of automobile springs, to automobile snubbers and engine supports, and of rubber shock absorbers to the landing gears of airplanes. Still further applications are being made in placing rubber in the bases of all types of industrial machines where vibration is encountered—motors, grinders, and reciprocating machines.

The ability of rubber to absorb shocks and damp out vibration does not necessarily depend upon its property commonly known as resiliency, which in itself is a somewhat vague term, but rather upon its property to dissipate work done upon it. It is quite apparent that if a mass were dropped by gravity upon a block of rubber and the mass rebounded to the same height from which it was dropped, no work has been dissipated and the resiliency of the rubber is 100 per cent, which is the same as saying that the coefficient of restitution of the rubber is 1.0. In practice, however, the coefficient of restitution of rubber is always less than 1.0 since, by the law of conservation of energy, the work done on the rubber by a falling body must necessarily be greater than the work done by the rubber on the body in trying to restore it to its original position. The difference between these two values of work is the loss in work during that cycle of operation. This loss per cycle is usually spoken of as a hysteresis loss because of its similarity to the hysteresis loss produced in a core of iron surrounded by a coil of wire through which an alternating current is flowing of specified frequency.

In Figure 1 is shown a typical hysteresis loop of a block of rubber. A load-compression curve was obtained up to a specified deflection of the rubber, then the load was slowly released and the return curve plotted as before. The area between these two curves represents the work in pound-inches dissipated during the cycle of compression of the rubber. This work took the form of heat which could have been measured as a rise in temperature by a delicate pyrometer.

If a rubber ball is allowed to drop onto a concrete sidewalk and not touched until it comes to rest, it will have the same general decadence curve as that shown in Figure II, which was produced by an impact pendulum (see Figure IV) striking a mass of rubber. The center of gravity of the pendulum falls a distance *b* and is returned by the rubber to a position *a*; it then falls again and is returned—the complete damping out process requiring about 31 cycles in order to reduce the impulse to zero or the pendulum to a state of rest. This curve was obtained on a revolving drum, the pen movement being proportional to the rise and fall of the center of gravity of the pendulum. This action is just what occurs when any mass of rubber is weighted down by a body which is struck a sudden blow; the inertia of the body assumes the role of the pendulum above.

The pendulum—decadence method can be used to compute the hysteresis loss, or the work dissipated, of various compounds of rubber designed to be used as shock absorbers. The revolving drum, on which the decadence curve of Figure II was traced, rotated at a constant speed. The period of the pendulum, for all practical purposes, is constant, as the abscissae divisions in Figure II show. The abscissae, therefore, represent time and the ordinates are proportional to the work, assuming a constant mass. The ordinate *b* may be said to be proportional to the work done by the pendulum on the mass of rubber by virtue of the potential energy stored in the pendulum, and the distance *a* may be said to be proportional to the work done by the rubber on the pendulum in trying to restore

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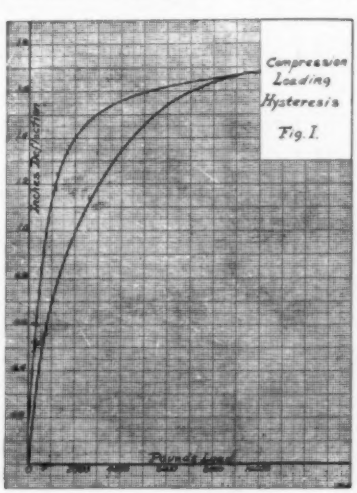


Fig. I.

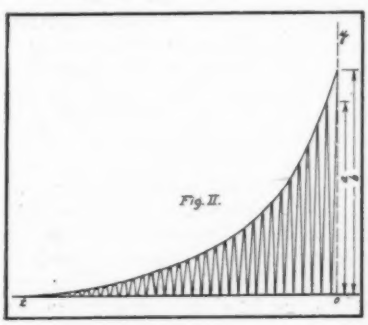


Fig. II.

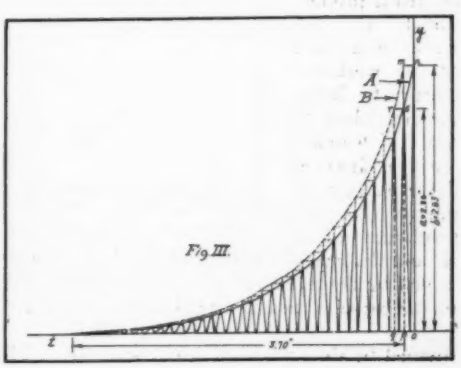


Fig. III.

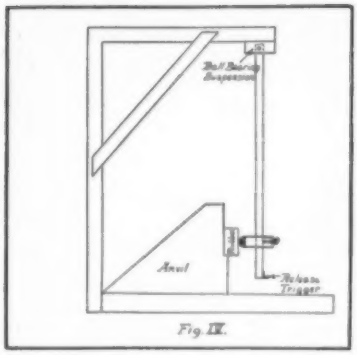


Fig. IV.

the pendulum to its original position; the percentage resiliency may be said to be

$$\frac{a}{b} \times 100.$$

By joining the tops of the individual ordinates the decadence or die-away curve is obtained. This curve has been found to fulfill the exponential equation:

$$y = be^{-\frac{t}{T}}$$ where

y = ordinate representing work
b = value of y corresponding to initial value of work done on the rubber
e = base of natural logarithms = 2.7183
t = time abscissae as recorded by revolving drum.
T = value of t corresponding to a value of y equal to 1/e th of b.

It will be recalled that this equation holds true for the law of a cooling body, for the discharge of a condenser through a resistance, for the damping of a telephone line current, for the rate of decomposition of radium, for the leakage of a charge from an electrified insulated metal sphere, etc., etc.

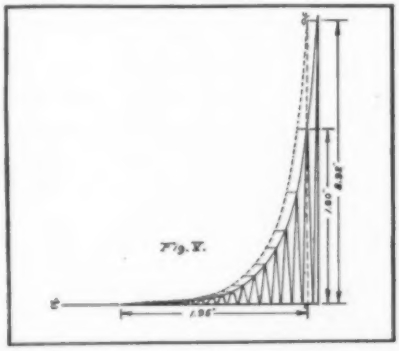
Now this equation can be made use of in computing the energy dissipated by the rubber. By projecting the tops of the ordinates to the left, as in Figure III and joining up the tops of the projected ordinates, a second curve is obtained similar to the first. The area under curve *B* is then proportional to the work done by the pendulum on the rubber, while the area under curve *A* is proportional to the work done by the rubber on the pendulum. The difference between these areas then is the work dissipated by the rubber in bringing the pendulum to rest.

The area under each curve can be obtained by integration. By integrating the basic equation:

$$y = be^{-\frac{t}{T}}$$ we get

$$\text{Area} = b\,T\,e^{-\frac{t}{T}}$$

Then taking curve *A* (Fig. III) from the point *s* and curve *B* from the point *m*, we get: area under curve *A* = 2.089 sq. in.; area under curve *B* = 2.348 sq. in.; area under curve *B* minus area under curve *A* = 0.259 sq. in.




This difference in area is proportional to the work dissipated or the work required to bring the pendulum to rest. If *b* represents a drop of the center of gravity of the pendulum of 2 ft. and the pendulum weighed 100 lbs., then the work represented by the rectangle *m n o p* is 200 ft.— lbs. The scale of the curve is then the quotient of the work (200 ft.—lbs.) divided by the area of *m n o p* or $\frac{200}{0.28} = 715$ ft.—lbs. per sq. in. of area. The ft.—lbs. or energy dissipated will be given directly by multiplying the difference in area under the curves by the scale, thus:

$$0.259 \text{ sq. in.} \times 715 = 185.2 \text{ ft.—lbs.}$$

The block of rubber used to produce the decadence curve shown in Figure III contained about 95 per cent of first grade rubber. The block of rubber used to produce the decadence curve shown in Figure V contained only about 20 per cent of first grade rubber. The damping out process shown in Figure V was of much shorter duration than that shown in Figure III because the rate of dissipation of energy was much greater.

It is highly desirable in certain types of shock absorbers that an impulse be damped out quickly while in others it is not desirable that this be done. In the case of motor mountings made of rubber the mounting has a definite period of oscillation similar to a spring loaded down by a definite mass. We know that the spring follows the law of the pendulum in that the action of gravity controls the period of oscillation *T* as follows:

$$T^2 = \frac{4\pi^2 e}{g}$$ where

g = acceleration of gravity
e = deflection in feet produced by the mass resting upon it
T = periodic time, seconds

Inasmuch as the motor itself sets up a reciprocating inertia force and the crankshaft has natural periods of oscillation, it is easy to see that when the explosion impulses come into phase with the fundamental periods of oscillation of either the rubber mounting, the crankshaft, or the reciprocating inertia force of the pistons, or with any harmonic of the fundamental, what is known as a critical period of vibration obtains and the amplitude of vibration may be increased as much as four times the normal amplitude. It is, therefore, highly important that a rubber motor mounting absorb the total amount of energy put into it during each cycle of oscillation in order to prevent harmonic periods manifesting themselves in the most commonly used speed range of the automobile.

## X-Ray Rubberized Shields

A Roentgen-ray shield being introduced in England, and said to be much more resistant than the lead type, has a composition largely of barite (barium sulphate) with rubber as a dielectric and binding material. Rubber is also used as a binder for shields composed largely of finely-divided bismuth and lead.—P. E. Harth, British Patent No. 280,636, August 17, 1926.

## Egyptian Cotton Favored

Although American long-staple cotton has proved to be so highly serviceable that it is preferred by most tire manufacturers for cord fabric material, some manufacturers, however, cannot be persuaded to use it and confine themselves wholly to choice Egyptian grades. They hold that the silky, brownish Egyptian cotton contains certain oils and waxes which are not found in American grades and which permit the filaments in a thread and the threads in a cord to slide upon one another so as to lessen wear in flexing, and that the natural elasticity, too, supplements the resiliency of the inclosing rubber. The imported Egyptian is also held to have greater tensile strength than its offshoot, American Egyptian, or Southwest Pima, which despite a whiter and longer fiber, is said to lack the lubricants inherent in the Egyptian.

# Can "Chains" Control Tire Sales?

*Rubber Manufacturers Certain They Can Hold Their Own With Big Retailing Concerns—Cutting Overhead First, Prices Later—Branches and Dealers' Future*

HARDLY has the problem of crude rubber at a reasonable price and in ample supply been measurably settled, than another riddle confronts tire manufacturers. It is how shall they best market their products in competition with the chain stores and mail order concerns, the rapid expansion of which is giving anxiety not only to tire makers but manufacturers of other widely-used goods. Thus one of the companies selling tires, and which up to a short time ago had confined its operations to mail orders, finding that "Mahomet would not go to the mountain" fast enough, has changed its tactics so as to meet buyers on a considerable scale, even planning to have some 1,500 branches throughout the United States by January, 1929. Another similar concern, adopting a like policy, is also establishing numerous costly retail depots at strategic points; while many well-financed automobile accessory companies dealing heavily in tires are also steadily adding links to their long chains, one having set up its 150th store in the Far West.

To such questions as, "will such concerns eventually control tire sales," "what are tire makers going to do about meeting changing trade conditions," and, "will the factory branch and the small tire dealer be ultimately eliminated," there are many answers as well as suggestions as to how best combat the rising power of the mail order chain store concerns. However, most manufacturers seem satisfied that they can hold their own in any contest that may arise but they are taking no chances.

### May Compete Without Clashing

The Rubber Institute, Inc., representing manufacturers producing 95 per cent of the standard tires consumed in the country, has in its efforts to better marketing been directing its potent influence chiefly against unreasonable and extravagant mileage guaranties made mostly by the "chains;" and in a nation-wide campaign, which is said to be bearing good fruit, has been urging as a proper substitute for nominal mileage a life guaranty on tires against defective materials and manufacture. Even some tire makers who do not belong to the Rubber Institute recognize the fairness of the new guaranty in principle and have assured the Institute of their moral and commercial support.

One of the largest tire producers in the country, also a member of the Institute, is planning a course of its own to deal with the new situation. Having established branch factories, minimizing the drawbacks of distance here and the difficulties of marketing abroad, and having practically, settled the question of economical production, this company is now making a more intensive study than ever of the problem of most efficient national distribution. In fact it is stated that it is now concentrating most of its energy solely on merchandising, not with the intention of locking horns with "big sales" competitors, but rather with the object of evolving a plan for safeguarding and extending the distribution of its many products without directly clashing with such powerful competitors.

The distribution of goods is now a paramount industry.

In view of the increasing importance of better merchandising, and realizing the need of more effective means of coping with the "chains," some tire manufacturers are planning to effect economies in marketing that will enable them, if need be, to lower prices to a point where the "chains" will find it hard to sell tires of uncertain quality at a profit in competition with those of known, outstanding merit. One such economy, it is said, will involve a drastic lessening of overhead in the sales department. Instead of carrying thousands of accounts, for instance, only hundreds will be carried. If, as one tire maker is quoted as saying, it costs, as much as $1.50 for invoicing a single tire, or a small lot, it is not hard to realize how great a saving in billing alone may be made by a factory in invoicing only in carload lots to large distributers of its own selection. The saving thus effected, with the paring down of other items of expense, can be shared with tire consumers.

Substantially, the plan contemplates the substitution for factory branches in many cities of what is referred to as a double set-up, one depot being well stocked with every size and type of passenger car pneumatic tires and another depot at some distance carrying a heavy, complete stock of heavy duty pneumatic and solid tires. In addition each depot may be fitted out to provide for practically all needs and conveniences of motorists. Each depot may be not only an elaborate single-stop station but also have a warehouse from which small tire dealers may procure ample supplies quickly and at as low a figure as though dealing directly with the factory. While such depots, designed to relieve the factory of the care and cost of soliciting and carrying numerous dealer accounts, may be privately owned, they may also be financed or otherwise aided by the manufacturer.

### Leaving Battle to "Chains"

In short, it is expected that in so lessening costs, in many cases now inordinate, said to be commonly 30 per cent, tires may be marketed by factories through such agencies quite profitably and even at so low a point that the "chains" to hold their tire trade will have to battle among themselves in Kilkenny cat fashion, selling tires at cost or less to market other merchandise. It is true that the "chains" would still have the alternative of establishing their own tire factories, but as the investment required to carry on such enterprises effectively is so considerable with risks great and results uncertain, the "chains" are likely to pause well before adopting

any such recourse. At any rate, well-established tire manufacturers feel that they could easily cope with any competition of that character.

As to the future of the factory branch and the small dealer, opinions vary. Noting that the largest oil company in the country has decided to quit maintaining 75 per cent of its exclusive gasoline stations on account of heavy upkeep, as also in the tendency to drastically reduce tire marketing overhead, some prophesy the early passing of the factory branch. Others think that while such may be abolished by concerns in large areas now covered by branch factories, factory branches will continue to be indispensable to factories remote from important distributing points, and particularly factories specializing on high grade tires sold largely through canvassing or for replacement of original equipment tires. If small tire manufacturers would push sales in distant territory, it is held that they cannot get on without a factory branch, as it can render a service that a general tire dealer could not or would not give.

### Small Tire Dealer Obsolescent

The position of the small dealer handling standard tires only seems less secure than that of the average factory branch. Some predict that within a couple of years his store will be as out-of-date as that of the old-time drugstore as compared with the modern emporium still bearing that name; and that just as the old apothecary shop found that it could not subsist solely on prescriptions and patent medicine sales, the store selling tires solely will under the new dispensation also find it unprofitable to continue, its best chance of keeping in business lying in stock diversification. As sales slacken and profits get narrow on one line of goods others must be added to carry the overhead as in a department store where many lines lighten the load.

The chances are, it is held, that the small tire dealer will never wholly pass out of the picture. There will always be a certain amount of neighborhood business and a chance to sell new mavericks and made-over tires to the motorist who shops around and who can be convinced that one tire is as good as another but whose main object is to save most in the short run. Just as exclusive dealers do now, they, too, will also offer free service to offset low prices quoted by "chain" dealers.

## Rubber in Sound Deadening

That rubber holds a unique place among sound-deadening materials is well understood, but not so well known is the rating which science gives it in comparison with other substances, some of which, like cork, are used to dampen din. Thus in the Smithsonian Institution tables giving the velocity of sound through many media it is shown that the lag is so great in vulcanized rubber that sound travels through it at the rate of but 177 feet per second. The resistance next above rubber's lowest rank as a sound-insulating medium is given to ether, 588 feet; then carbon disulphide, 606; chlorine, 674; alcohol, 756; carbon dioxide, 846; nitrous oxide, 859; ethylene, 1,030; air, 1,088; carbon monoxide, 1,106; tallow, 1,280; water, 1,315; steam, 1,392; methane, 1,417; cork, 1,640; and thence up the scale to aluminum, carrying audible vibrations at 16,740 feet per second.

## Presidential Year Brings No Trade Slump

According to a survey prepared by the National Association of Manufacturers the business slump a presidential year is supposed to bring does not exist in 1928. In the rubber group 43 per cent reports business as excellent, 14 per cent fair or poor; winter prospects, 57 per cent excellent, 29 per cent good, 14 per cent poor.

# Rubber Cement Binders *for* Foundry Cores

DRY sand cores for foundry work are baked to give them sufficient strength to withstand handling and retain their forms and position when surrounded by molten metal. Strength is required, however, only before casting, for after that the core must readily disintegrate to facilitate its complete removal from the casting. Failure to meet the essential working conditions on the part of cores may be the cause of serious loss to foundries. The removal of cores from castings is usually laborious and necessarily expensive, sometimes requiring the use of power tools. At other times castings crack due to hard cores which fail to crush as the metal solidifies. Core blows are another source of loss due to low permeability.

The suitability of rubber or similar material as a core binder has been investigated[1] and the outstanding advantages of cores prepared with such binders are summarized as follows:

The cores crush readily, falling to loose sand of their own accord so that the core sand may be poured from the casting instead of having to be dug out. They have greater strength than a green sand core and extend the range of jobs to which a readily crushed core may be applied. The cores are not oven baked but merely air dried. They are of high permeability and show remarkable freedom from blowing.

A plain rubber binder consists of a thin rubber-gasoline solution or cement made with crude rubber. Vulcanized rubber is not soluble so the plain rubber binder is not an outlet for old automobile tires or tubes. The rubber must be raw, unvulcanized rubber. The gasoline used should be of a quality, so that only traces of a kerosene-like non-volatile residue is present. The type commercially known as "Aviation Gasoline" is satisfactory. A good ratio of rubber to solvent is one pound of rubber to two gallons of gasoline, or seven per cent by weight. Any suitable method of mixing can be used.

The binder is mixed with the dry core sand in any suitable type of muller or mixer, or, experimentally by hand rubbing. Suitable proportions for typical sands are 92 parts sand to 8 parts of binder. When sand and binder are properly mixed the mixture does not have the stickiness of the cement, but will rub off the hands readily and will not stick to the core boxes. The core is rammed as usual and dried in a closed chamber through which a gentle current of air is drawn. The solvent can be recovered with proper precautions against fire. Rubber bonded cores are not to be baked as other cores are baked.

While there are possibilities in the idea of adding sulphur and hardening the rubber bonded core by vulcanization the difficulties in the way are such that these possibilities are not to be realized at present. The new binders have proved to be successful in producing sand cores for castings of lead, tin, zinc, brass, phos-bronze, bronze, aluminum, iron and steel.

[1] "Rubber Binders for Foundry Cores." Letter Circular 252, Bureau of Standards, Washington, D. C.

## Rubber-Bonded Grinding Wheels

Grinding wheels and other abrasive articles are formed of carborundum or like abradant bonded with rubber in which beeswax serves as a modifying agent and decreases the hardness of the product after vulcanization. Pehr Johanson and Duane E. Webster (to Norton Co.). U. S. Patent No. 1,676,190, July 3, 1928.

# Rubber Division A. C. S. N. Y. Group Meeting

THE first of the series of dinners to be held this autumn and winter by the New York Group of the Rubber Division, A. C. S., took place Wednesday evening, October 10, 1928, at the Town Hall Club, 125 West Forty-third St., New York. The attendance numbered about 200. The speaker of the occasion was Charles R. Boggs, factory manager of the Simplex Wire & Cable Co., Boston, Mass. His lecture on "The Manufacture, Technology and Testing of Rubber Insulated Wire" was an instructive presentation of the general subject omitting the theoretical and electrical aspects of the subject.

Some of the facts of historical interest and importance in connection with the relatively new industry of insulated wire and cable making were given as follows.

Wire manufacture started in the 14th century. The first insulated wire was made in Russia in 1812 for mining purposes. The first insulation in England produced in 1816 consisted of glass tubing within which the wire was pulled and the glass sections united by fusion at the ends. This impractical form was succeeded in 1838 by covering wire with tarred rope. The following year, 1839, rosin compounds were used in England. In 1838 Morse constructed his recording telegraph instrument and in 1841-2 he laid a rubber insulated cable in New York harbor. The Morse code was developed for the use of one wire but that required insulation. The first successful telegraph wires were air insulated bare wires and such are still used today. The first real need of insulated conductors began in 1845 and was met by asphalt and wax insulated cables drawn into lengths of lead pipe for protection.

Vulcanization of rubber was discovered in 1839 by Charles Goodyear. The plastic working quality of gutta percha and its merits as an electrical insulation led to its seamless application by extrusion upon wire by Siemens in 1847. Two years later it was applied to wire by a strip winding process. It is the best and most permanent insulating material known and the only one suitable for transoceanic cables, being used originally for this purpose in the first Atlantic cable in 1853 and in the second in 1866. Thus in these early days of the industry the materials, methods and design were at hand. Since then development and refinements have brought the production of insulated wires and cables to the present highly efficient products.

The telephone dates from 1876 and Edison's incandescent lamp from 1879. The latter invention marks the first demand for the transmission of electric power. The same year the first practical lead extrusion press was developed in Switzerland and has since become essential in power cable construction for applying the outer protective sheath. Vulcanized rubber insulation was begun by Habirshaw in the early eighties. The Simplex company began in 1887 and produced insulated wire in 1889. Paper cables were made by Callender in 1890.

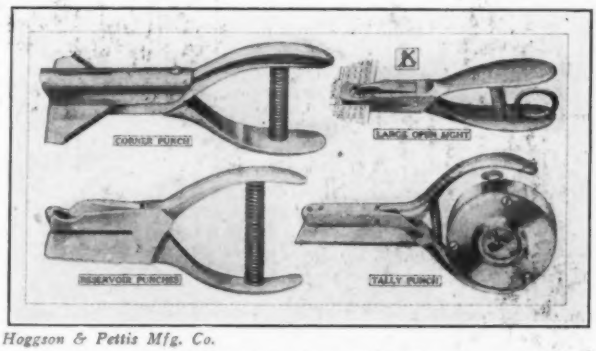
In general, cables are designed for either signals or power. Signal wire and cables are of many varieties each adapted to some special need such as transoceanic cables, telegraph, telephone work, etc. Power cable varieties are less numerous and may be subdivided into power for lighting and those for high power for heating and conducting high voltage power across country for machinery operation. In the production of these various wires and cables, copper is the principal conductor, although aluminum and steel also are used.

The following are adaptations of insulating materials: dry paper and air, lead covered, for telephone; impregnated paper, lead covered, for power; varnished cambric, for power; sector conductor gutta percha for submarine telegraph; vulcanized rubber for nearly all services, because rubber is a good insulator, waterproof, flexible, permanent with protective coverings, and can be compounded for various electrical requirements and price.

The machinery employed in wire insulation and cable making consists of the usual rubber mill machinery for preparing and vulcanizing rubber products and in addition many special machines such as braiders, cabling machines, lead presses and armoring machines. A comprehensive account of this special equipment and details of its use will be found in an article entitled "Insulated Wire and Cable Manufacture."[1] The lecturer concluded with a summary on cable costing and the special type of selling effort required to dispose of the product to telephone, telegraph, power and light companies, large contractors, and the army and navy.

# Special Ticket Punches for Rubber Factory Use

THE familiar ticket punch used for cancellation of railroad tickets finds various applications as a tool auxilliary to many factory activities where check systems are in effect in connection with marking work cards, time cards, stock tickets, visitors' passes and tickets used in various factory record systems. Seconds of boots, shoes and other thin walled rubber articles are marked by special punches. Other punches are designed for cutting holes in fabrics, making valve stem holes in bicycle tires, etc. The utility of such




*Hoggson & Pettis Mfg. Co.*

**Hand Punches for Factory Use**

hand punches is unlimited as they afford a ready means of making an indelible record without delay or danger of duplication by unauthorized persons.

The best punches are made from high grade malleable castings and punches and dies are hardened all over. Dies of regular designs are available running into the hundreds and where none of these are suitable for a given purpose special designs are easily substituted.

In the group picture are illustrated four only of many designs of punches. These are known respectively as large open sight, corner, tally and reservoir punches. The open sight is so made that the user can readily see the exact location of the figures on a ticket that he desires to cancel. The corner punch is designed for corner cutting round holes or oblong slots, in tags, tickets, samples, seconds, etc. The tally punch is a combination of punch and counter for recording the cancellations. The reservoir punch, as its name implies, has a box or reservoir for receiving the cuttings where their falling promiscuously would be objectionable.

[1] INDIA RUBBER WORLD, April 1, 1927, pp. 5-7.

# VIEWS OF THE ENDICOTT JOHNSON RUBBER PLANT

A

SOLE STOCK SHEETING MILLS

HEEL AND SOLE PRESS ROOM

D

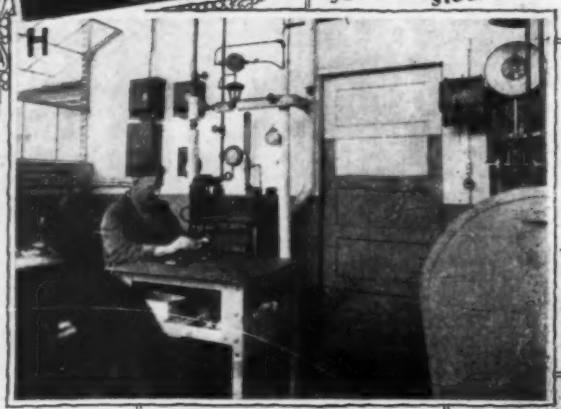
MOLDING SOLES

PLACING NAILING WASHERS IN HEEL MOLD

TRIMMING HEELS AND SOLES

SOLE INSPECTION AND STOCK ROOM

CHEMICAL LABORATORY



H

PHYSICAL LABORATORY

# Modern Rubber Heel Plant

## *Leading American Leather Shoe Manufacturing Co. Operates its Own Extensive Rubber Plant to Meet Popular Demand for Rubber Heels*

THE success and popularity of rubber heels with the American public justifies the establishment of the complete rubber plant, shown on the opposite page, for the manufacture of rubber heels and soles as original equipment. This plant not only houses the facilities for the daily production of 125,000 pairs of rubber heels but in addition, 60,000 pairs of molded soles, 40,000 yards of rubber welt, 8,500 pairs of vulcanized shoes, and 30,000 pairs of soft rubber box toes. Besides this a rubber reclaiming plant is operated to furnish a daily output of 10 tons of reclaim consumed in the manufacture of the above list of goods.

### Factory Equipment

The building occupied as the rubber factory is five stories of ample size and area. It will be noted that this building is served by double track freight facilities and roofed over receiving platform. Crude rubber, compounding and other supplies are thus handled directly into the manufacturing building and not into a special warehouse from which their removal would be required at an extra handling cost as needed for manufacture.

In fact, the practice at this factory is to so regulate the receipt and consumption of supplies that a close balance is maintained. This is possible because the variety of raw materials is small and their consumption steady, owing to the regularly maintained daily output of finished products. This plan results in a large saving of space and labor.

### Mixing and Blanking

Compound batches are handled automatically to the Banbury mixers, of which the installation comprises four Number 9, each with capacity to handle batches of 450 pounds of heel stock at a mixing. The rubber stock as discharged from the mixers is received on finishing mills where the accelerator and sulphur is incorporated thus completing the stock ready for further processing. This in the case of soling consists in sheeting out to suitable gage on 60-inch mills the installation of which is shown at *A* in the group illustration.

In the case of sheet stocks, the warmed mixing is fed through small sheeting rolls which deliver a cut strip of gaged stock of proper width for cutting a single heel. This strip, run to a gage, passes directly from the sheeting rolls into and through an automatic dieing out machine which cuts the heel blanks of constant volume and with extreme rapidity. The accuracy of the heel blanks thus produced is indicated by the fact that on a blank standardized at 108 gr. the plus or minus deviation of weight runs one-half gram over or under. The heel blanks lightly dusted to prevent adhesion are ready for removal to the press room, a general view of which is seen in picture *B*.

### Press Curing

The work of molding heels is indicated in *C*. A four opening steel platen hydraulic press is used. The operator sets the conical steel nailing washers on burrs on the pins by sliding a light hand magazine machine over the cavities of the open mold as shown in *C*.

The presses have five openings and are operated by a man on either side using hydraulic roller top mold tables which facilitate charging and discharging. Eight molds are handled at each press, six in the press curing while two are in the hands of the operators, on either side. The cure is 12 minutes at 80 pounds of steam. The molds are three part with the heel tread on the bottom plate fitting as a shallow plunger into the middle plate to facilitate removal of the cured heel.

Sole molds are single cavity. They are operated by two men to a press and are moved in and out of the press on roller elevating tables mounted on short floor tracks as depicted in view *D*.

### Trimming and Inspecting

The finishing operations of trimming and inspecting take place in special rooms as shown in pictures *E* and *F*. Trimming is done by girls on modern motor driven high speed machines and the goods received in cans for removal to the stock and inspection department *F*.

### Laboratory Control

The group of plants of the organization, both leather and rubber, are operated after most approved scientific control in which chemical and physical testing facilities have an important part. Two laboratory views are here shown, *G* is a view in the rubber analytical laboratory and *H* a corner of the vulcanizing and physical testing room. Both of these laboratories are essential for the control of the standardized quality of the rubber product, the first by checking the grade of rubber and compounding ingredients, revising rubber mixing formulas, and the second by setting cures and testing the physical quality of the product.

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# Rubber Division, A.C.S. Boston Group Meeting

THE second meeting of the Boston group of the Rubber Division, A. C. S., will be held Wednesday, Nov. 7, 1928, at the Boston City Club, 14 Somerset St., Boston, Mass. The meeting will open with a dinner at 6 p. m. to be followed by an address by Dr. Philip Schidrowitz of London, England, on "Vulcanized Latex and its Commercial Applications."

The prominence of the speaker as a chemist of international reputation and especially as the inventor of vultex renders this meeting one of exceptional interest to everyone connected with the rubber industry. The fact that vulcanized latex is an entirely new form of rubber, the commercial application of which is only at its beginning will stimulate the discussion of the address. The election of a permanent chairman and other officers for the Boston Group will take place just prior to the address.

Reservations should be made with C. R. Boggs, Simplex Wire & Cable Co., Cambridge, Mass., not later than Nov. 2. The charge for the dinner and attendance at the meeting is $2.50 per person.

# The Effect of Temperature on Vulcanized

A. A. SOMERVILLE

## Epit

*A method has been devised and a mach strain relation of vulcanized rubber at*

*The Testing Machine Itself.*
*Stress-Strains of a Tire Tread Stock at 0° and 100°C.*
*Stress Changes Between 0° and 100°C. at Different Elongations.*
*Stress-Strains of Different Rubbers.*
*Stress-Strains at Six Different Temperatures.*
*Effect of Time of Cure on Stress-Strains at Different Temperatures.*
*Effect of Per Cent of Sulphur on Stress-Strains at Different Temperatures.*

### Preface

IT has become quite generally recognized by rubber technologists that the physical tests on vulcanized rubber are affected by the temperature of the testing room. It has also been recognized that a tire in service may become quite hot and that the wearing qualities of a tire differ from summer to winter or from hot to cold weather. The existence of the above conditions is sufficient, if any reason is needed, to warrant further laboratory work to learn more about the influence of temperature on the physical properties of vulcanized rubber.

### Previous Work

Recently there have been issued at least two published reports showing in considerable detail the results of work along the line of testing rubber at different temperatures. One of these reports by Van Rossem and Van der Meijden on the influence of high temperature on the stress-strain curve of vulcanized rubber covering work done at the Netherland Government Rubber Institute at Delft gives results and draws conclusions of tests made at a range of temperatures from 70° to 147° C. on a compound consisting of 92½ per cent of rubber and 7½ per cent of sulphur.

The U. S. Bureau of Standards has published Technological Paper No. 364 showing physical tests obtained on six rubber compounds tested at temperatures varying from —70° to +147° C. The Physical Testing Committee of the Rubber Division of the American Chemical Society has made tests to determine the influence of different temperatures on the tensile, elongation and stress-strain of five compounds and is now engaged in making tests to determine the effect of temperatures ranging from 15° to 35° C. on the abrasive resistance or wearing qualities of four compounds.

In 1925 the Physical Testing Committee of the Rubber Division of the A. C. S. in its report included stress-strain figures supplied by Dinsmore on a compound tested at four different temperatures ranging from 21° to 30°C. Various brief notes about the effect of temperature on the physical tests on rubber have also been made in earlier publications.

### Present Work

Due chiefly to interest aroused by reading Bureau of Standards Technological Paper No. 364, wherein results were given showing the effect of various temperatures on what might be termed commercial compounds, the authors had a desire to obtain further information along these lines and to this end conceived the idea of a simple method of making fairly accurate tests at different temperatures on vulcanized rubber.

### Method of Test

The method used is quite comparable to the usual methods of testing rubber, but with the additional advantage that the rubber test piece may be subjected to a predetermined fixed temperature while undergoing the test. For this purpose a tank capable of holding liquid is attached to a standard vertical rubber testing machine in such way that the jaws holding the test piece and the test piece itself are submerged in the liquid while the test piece is being stretched, and the stress-strain curve is automatically recorded on the testing machine chart.

### Testing Apparatus

Figure 1 shows such a testing machine with hand devices for measuring elongation removed and equipped with jaws for use in testing a ring shaped sample.

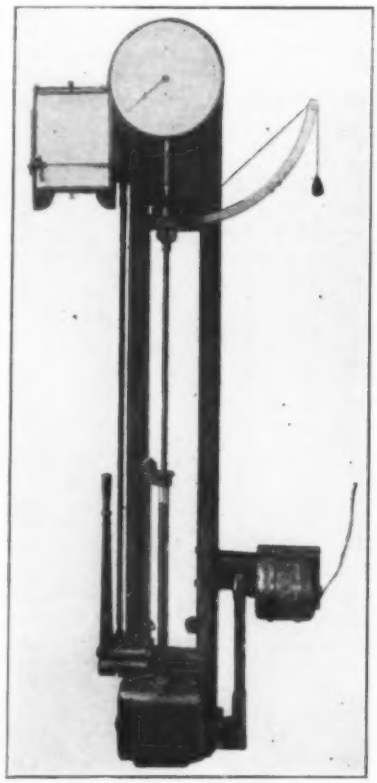


Fig. 1

Figure 2 shows the same machine equipped with a tank to hold liquid in which the rubber test piece may be stretched and maintained at the same temperature during the test as the temperature of the liquid.

The tank is a rectangular sheet iron box about 24 inches high mounted on the frame of the testing machine. The stretching bar, motor driven, pulling the lower jaw to which the test piece is attached passes through the bottom of the tank. That part of the stretching bar is a round metal rod and by means of an ordinary packing gland in the bottom, the tank is made practically leak proof. The tank is provided with long vertical glass windows in front and rear to permit observation of the sample during the test, although this observation is quite unnecessary.

At the bottom of the tank electric immersion heaters are inserted for heating the liquid in the tank. The liquid used in these experiments was water because it could easily be held at the temperatures desired for these tests and because the effect of water on the rubber was, we believe, negligible, during the short interval of test. When the tank was filled with water and finely cracked ice the temperature could be held readily between zero and two degrees C., and when the electric heaters were in operation the water could be held very close to 100° C. The heat transfer to or from a small sample of rubber in water is very rapid. It was found that a stock produced the same stress-strain curves whether immersed only a few seconds or for 15 minutes before stretching. To secure fair uniformity the samples were immersed at no tension ten seconds in the hot or cold water before stretching. Five seconds immersion would have given practically identical results.

The jaws or grips for holding ring-shaped test pieces on the testing machine each con-

[1] Presented before the Rubber Division, A. C. S., at the 76th Meeting, Swampscott, Mass., Sept. 10-14, 1928. Courtesy of *Ind. & Eng. Chem.*
[2] R. T. Vanderbilt Co., Inc., New York.

# *the Stress-Strain Properties of Rubber*[1]

and W. H. COPE[2]

*ome*

*ine developed for measuring the stress-0° or 100°C. These results are shown.*

*Effect of Per Cent of Accelerator on Stress-Strains at Different Temperatures.*

*Fatigue Tests at 0° and 100°C.*

*Set Tests at 0° and 100°C.*

*Stripping Tests on Friction Stocks at 0° and 100°C.*

*The Effect of Over-Cure on Stress-Strains at Different Temperatures.*

*The Effect of Anti-Oxidants on Stress-Strains at Different Temperatures.*

sisted of 2 ball-bearing spools ½-inch in diameter spaced horizontally 1¼ inches between centers. This type of jaw was adopted after numerous tests with single spool jaws and with spools of different diameters. It was found that these spools rolled freely under the conditions of heat and cold used throughout the test and there was no indication of cutting the sample at the point of contact with the spools.

In order that the operator could apply the rubber test rings to the jaws without dipping his hands into the hot or cold liquid a slip joint was provided in the bar to which the top jaw was attached. This slip joint permitted both the top and bottom jaws to be raised above the level of the liquid in the tank when the pulling bar was brought to its topmost position. This loose coupling or additional movement of the upper jaw accounts for the autographs starting at a fixed point above the base line of the graph sheet.

### Test Specimens

Dumb-bell test pieces could not be used because it is not possible to follow the marks showing elongation accurately on the test piece after it is submerged in the liquid and also because the autographic record of a dumb-bell piece does not represent the true stress-strain curve. It is most convenient to use a ring shaped test piece, and in this work a ring 6 inches in mean circumference 1/10 of an inch wide and approximately 1/10 of an inch thick was used. Test pieces of this kind were made by cutting rings out of flat mold cured sheets using for the purpose cutting dies such as are now standard equipment on the market.

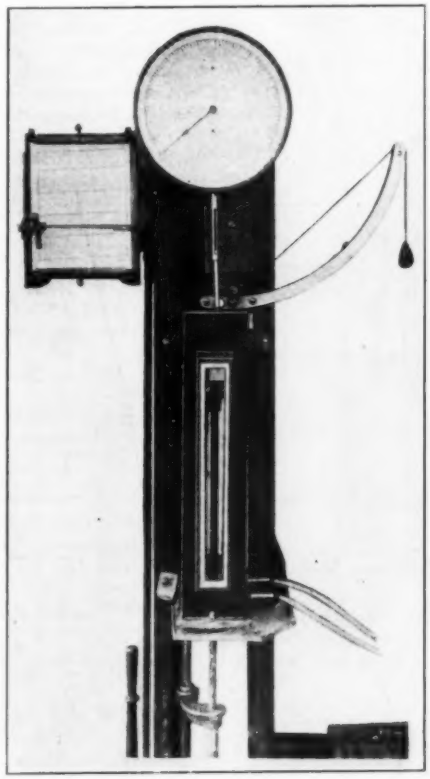


**Fig. 2**

### Stress-Strain Curves

The physical property of vulcanized rubber which is most affected by change in temperature is that property usually referred to as stiffness, but in reality what is being measured is the stress required to stretch the test piece a certain percentage of its original length and the curve showing the relation between the stress and the percentage elongation is known as the stress-strain curve. The exact definition of longitudinal stress is the ratio of force to cross sectional area and in this work it has been calculated to pounds per square inch. Similarly longitudinal strain is defined as the ratio of the total elongation to the original length.

Accordingly the physical property that was measured and studied in these experiments was the stress-strain curves of various compounds maintained at different temperatures during the test. In using a ring shaped specimen and spool jaws of the type described it is possible to get an accurate autographic record of the stress-strain curve with one of the standard autographic recording devices which is a part of the Scott rubber testing machine. The thickness or gage of the test rings varies considerably, but it is possible as usual to determine that gage and to calculate the tensile per square inch at any elongation up to 500 per cent from the autographic curve. As the machine and chart are constructed the figures on the Y axis or abscissae represent per cent elongation of the test piece and the figures on the X axis or ordinate represent pounds pull as measured, indicated, and recorded by the testing machine. The graph sheet used on the testing machine is not laid out in exactly rectangular co-ordinates, but the lines in the direction of the X axis deviate by a slight angle from a horizontal base line. This chart is so laid out as to compensate for the slight downward movement of the upper jaw of the test machine while the sample is being stretched.

Figure 3 shows an original chart with stress-strain autographs drawn by the testing machine. It should be noted that the cross section lines of this original chart are not exactly rectangular, but are slightly off square as explained in the previous paragraph.

Figure 4 shows autographic stress-strain curves for samples tested at 0° and 100° C. These test pieces were cut from one sheet representing a typical tread stock containing rubber, zinc oxide, carbon black, sulphur, accelerator, anti-oxidant, and softener, given what was considered to be a proper cure. It may be noted when the sample is elongated to 400 per cent, the line AB represents the stress when the sample was stretched at 100° C. and the line AC represents the stress when the sample was stretched at 0° C. That bow or "belly" seen in the curves at a point from 0 to about 30 per cent elongation is real and is not due to the sluggishness of the testing machine. The bow or "belly" would be in the opposite direction if it were due to the sluggishness of the machine.

If a spiral steel spring replaces the rubber test piece and the stress-strain curve is drawn, the curve is very nearly a straight line from the origin with an indication of a slight sluggishness of the testing machine, which may be minimized by proper lubrication.

It may be determined from Figure 4 that the relative spread between the 0° and 100° C. stress-strain curves is not constant for all elongations. An attempt has been made to show that relative separation of the stress-strain curves in Figure 5. Stresses at different elongations have been plotted as taken from the 0° and 100° C. stress-strain curves and the ratio of the stress at 100° to

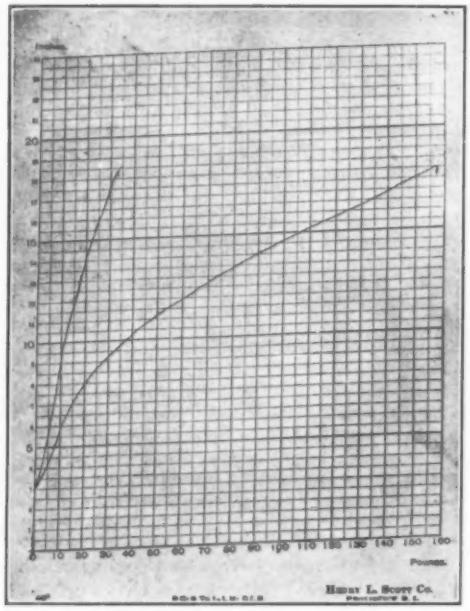


Fig. 3

the stress at 0° C. at each elongation has been shown as a percentage figure. That percentage figure has been drawn to the left indicating a decrease in stress in passing from 0° to 100° C. and it is seen from Figure 5 that the ratio of the stress at 100° to the stress of 0° C. is the greatest at the lower elongations. If no stress were required to stretch a piece of rubber at 100° C. then the line AB in Figure 4 would be zero and the ratio of AB

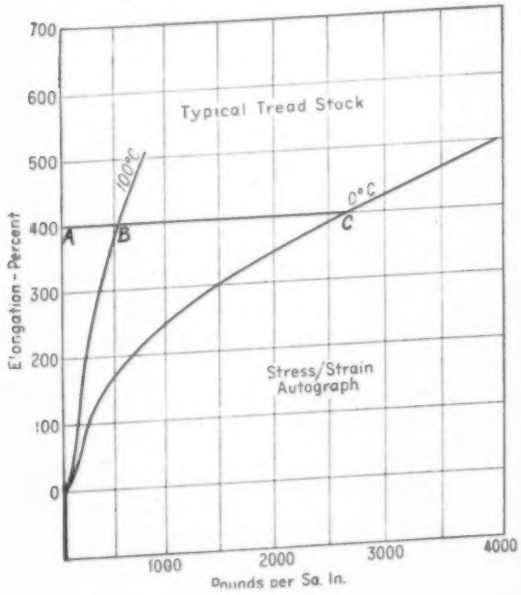



Fig. 4

to AC would be zero and the corresponding percentage line in Figure 5 would be zero. In other words, the shorter the percentage line in Figure 5 the greater is the relative separation of the 0° and 100° C. stress-strain curves.

It must be admitted that the possibility of a mechanical error in the machine at the lower elongation is greatest and it should also be stated that the exact rate of change and shape of curves differ for different compounds, and these samples shown are merely what we would term general illustrations taken from typical compounds in use today. Probably the error of the autographic stress-strain curves due to various factors is within the limit of plus or minus 5 per cent. For most of our further work we have made comparisons of stress at the 400 per cent elongation.

### Various Rubbers

The effect of temperature on the stress-strain differs for various rubbers. In Figure 6 is shown the stress at the 400 per cent elongation taken at both 0° and 100° C. in the case of nine different rubbers in one simple compound together with the ratio of the stress at 100° to the stress at 0° C., expressed as a percentage figure. Again it should be remembered that the shorter percentage lines indicate the greater relative spread between the stress-strain curves at 0° and 100° C. These nine rubbers were compared in three compounds. The first compound consisted of 100 rubber and 10 sulphur. The second compound 100 rubber, 8 sulphur and 3 aniline. The third compound 100 rubber, 5 zinc

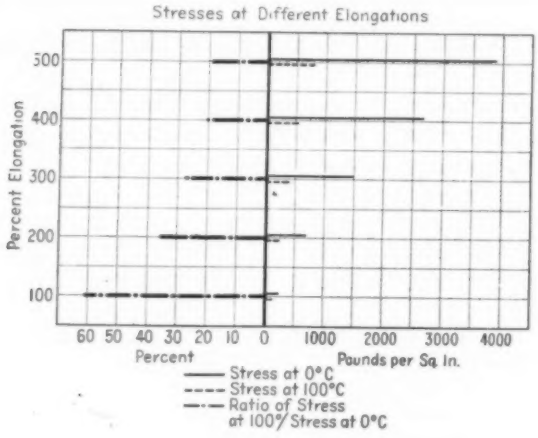



Fig. 5

oxide, 1 hexa and 5 sulphur. In the further work smoked sheet has been used in all compounds.

The variation in temperature effect on different rubbers may be shown in a more striking way in Figure 7 by showing the stress-strain curves on fine para and guayule tested at 0° and 100° C. Probably it would naturally be expected that inasmuch as the guayule contains a considerable percentage of resin, it might be more greatly affected by a change in temperature. This is true of guayule in both a cured and uncured state and is evidenced in the uncured state by its unusual softening qualities on a warm calender.

### Various Temperatures

Tests have been made on stocks at various temperatures between 0° and 100° C. and in Figure 8 the autographic stress-strain curves are shown for a typical tire tread stock at 0°, 20°,

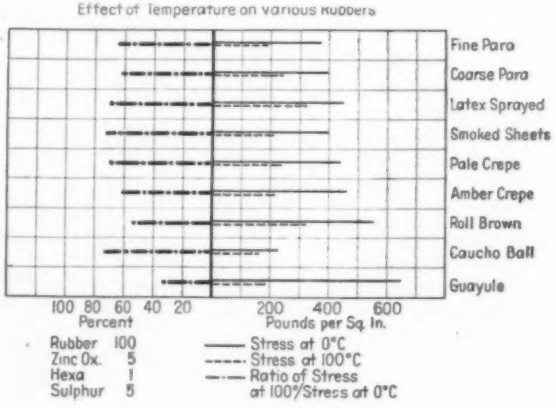



Fig. 6

40°, 60°, 80° and 100° C. These curves are spread out in a fan shape arrangement just about as one would expect.

The stresses at the 400 per cent elongation at different temperatures have been read from Figure 8, and these data put in a different form in Figure 9, where the temperatures in degrees centigrade from 0 to 100 are indicated on the Y axis and the horizontal lines or those parallel to the X axis indicate the stresses at the different temperatures, and from this Figure 9 it is readily seen that the rate of change of stress decreases as the temperature increases within the temperature limits used in this experiment.

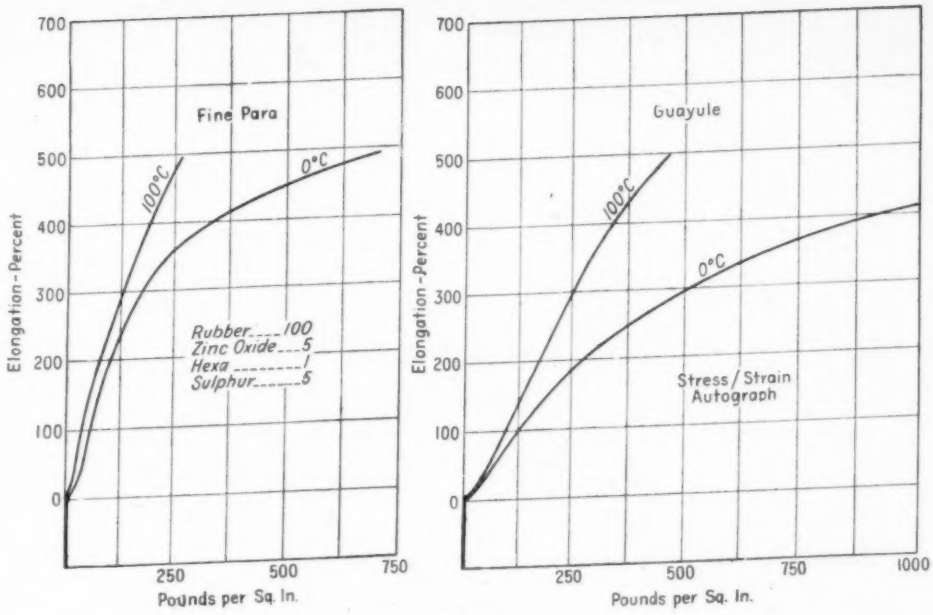



Fig. 7

### Time of Cure

From the beginning of these experiments it was quite evident that the length of time of cure is an important factor in affecting the spread of these 0° and 100° C. stress-strain curves, so in all this work each stock has been given a range of six cures at one temperature and some stocks have been given a range of cures at two or three temperatures. Dumb-bell shaped test pieces have been used in making the usual tensile and elongation breaking tests in air and from these data what has been considered to be the best cure or cures have been selected and used in making calculations and drawing conclusions from the stress-strain curves made at different temperatures.

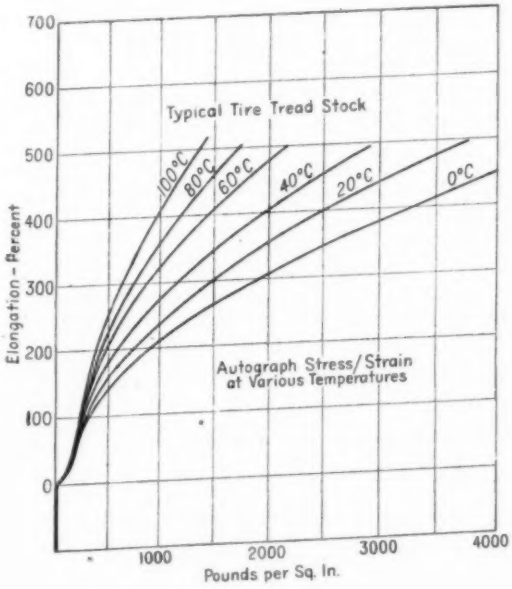



Fig. 8

If the tests on the dumb-bell pieces in air have shown that the stock had a fairly flat curing curve, and it is difficult to pick what one considers to be the best cure, two or even three cures have been taken in some cases and the average of these used in drawing final conclusions. The stress-strain curves at 0° and 100° C. have however been drawn on samples of stock of all six cures in every case, though what is obviously the under-cures and over-cures have not been used in making calculations pertaining to stress-strain data.

The method of selecting a proper cure can best be illustrated by Figure 10. Assuming that a stock has been given a range of six cures 15-30-45-60-75 and 90 minutes at some fixed temperature, the tensile strength of these cured stocks is determined by the usual method of breaking dumb-bell shaped pieces in air. The tensiles per square inch are then calculated and plotted in the form of a curve as shown in Figure 10.

A range of cures is always taken that will include both an undercure and an overcure. From the tensile curve for this range of cures the proper cure or the cure that we have selected for use in making our calculations of the stress-strain relations at 0° and 100° C. would be one such as the 45 minute cure in this case. If the tensile curve over the range of cures is a fairly flat line, and it is difficult to pick one proper cure, then three cures have been picked such as the 30-45 and 60 minute cures, and the average results obtained on the three cures used in calculating stress-strain relations of the tests which were made at 0° and 100° C.

A typical tread stock has been cured at 10-15-30-40-60 and 75 minutes in a laboratory slab or sheet mold at 141° C. The stress-

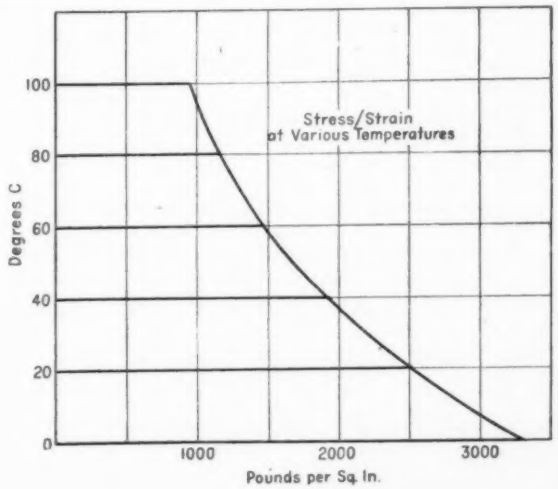



Fig. 9

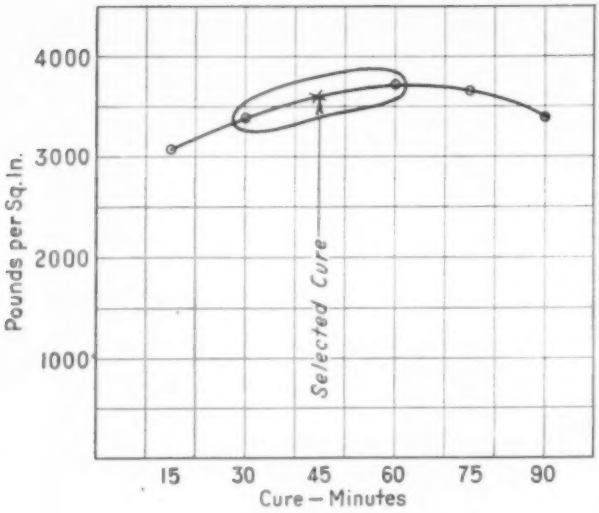



Fig. 10

strain curves at 0° and 100° C. are then drawn autographically on samples of stock given each of these six cures. The stress at the 400 per cent elongation at both 0° and 100° C. is then read off of these autographic curves. These stresses are shown in Figure 11. The ratio of the stress at 100° to the stress at 0° C. is then shown as a percentage figure drawn to the left representing a decrease in stress or stiffness of the stock as the temperature is raised from 0° to 100° C. It is to be noted from that figure as it would be expected that the stress at 400 per cent increases as the cure progresses when the stress is measured at either 0° or 100° C. It is also to be noted that the ratio of the stress at 100° to the stress at 0° C. increases as the cure progresses.

### Sulphur Variation

It is an old story that there was originally much complaint before vulcanization with sulphur was known that raw rubber was quite stiff when cold and quite soft when hot. Vulcanization with sulphur went a long way toward eliminating that trouble. The effect of the amount of sulphur used is shown in Figure 12. Compounds were mixed with various amounts of sulphur from ½ to 6 per cent on the rubber given a range of

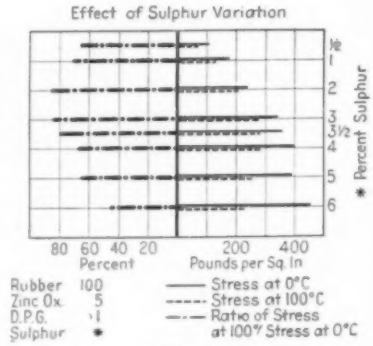



Fig. 12

six or more cures and what was considered to be the best cure used in calculating the data shown in Figure 12. The stresses at the 400 per cent elongation at 0° and 100° C. are shown in Figure 12. The compounds containing the low amount of sulphur were naturally not well cured, but it is interesting to see that the amount of sulphur which gives the minimum spread between the 0° and 100° C. stress-strain lines is 2 or 3 per cent. If one goes to the extreme of using 40 or 50 per cent of sulphur making hard rubber the ratio of the stress at 100° to the stress at 0° C. is undoubtedly very low. Likewise if one goes to the other extreme of using 0 per cent of sulphur the ratio of the stress at 100° to 0° C. is fairly low. It seems confusing that the spread between the 0° and 100° C. stress-strain curves should decrease as the cure progresses and that the spread between the 0° and 100° C. stress-strain curves should increase as the amount of sulphur added to the compound is increased. No determinations of combined sulphur have been made.

### Accelerator Variation

Apparently if one obtains approximately the correct cure the variation in the amount of accelerator used is not as important as the variation in the amount of sulphur used in its effect upon the spread of the 0° and 100° C. stress-strain curves.

In Figure 13 data are shown where the sulphur is held constant at 4 per cent on the rubber excepting in the last compound where the sulphur is reduced to 2 per cent. The amount of accelerator is varied from ½ to 2 per cent. Again approximately the correct cures are used as well as can be determined. The stresses at the 400 per cent elongation at 0° and 100° C. are indicated and the ratio of the stress at 100° to the stress at 0° C. is again shown as a percentage. It is interesting to note that when the sulphur is reduced from 4 to 2 per cent with high acceleration that the spread between the 0° and 100° C. stress-strain curves is decreased.

### Fatigue Tests

An attempt has been made to make what might be termed a fatigue test on a typical tread stock properly cured, these tests being made at 0° and 100° C. A ring specimen was put on the testing machine, stretched once to 500 per cent elongation and returned to its original position and this action repeated several times. Inasmuch as the ring shaped specimen is 6 inches in mean circumference it is necessary to elongate the piece a total of 15 inches in order to obtain 500 per cent elongation. The stretching bar operates at the rate of 20 inches per minute and returns to its uppermost position at the same rate without any appreciable interval of time for reversal between the end of the stroke at either the upward or downward position of the stretching. It is readily seen from Figure 14 that

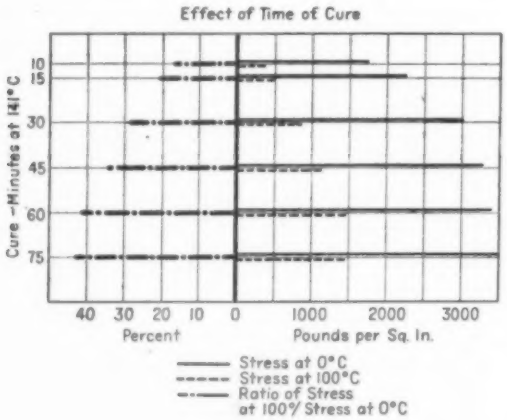



Fig. 11

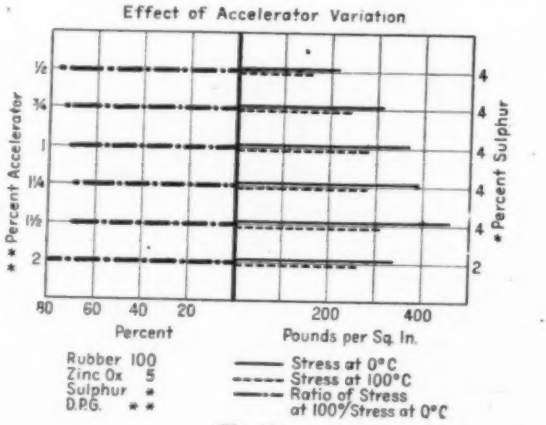



Fig. 13

after the sample has been stretched 3 times at the 0° C. the stress-strain curve begins to approach a constant and this final curve is much different from the curve obtained on the initial test or the first time the sample is stretched.

### Set Test

The above test has been changed slightly as shown in Figure 15 in which case the sample is stretched to 500 per cent elongation and held in that position 5 minutes, then brought back to the original position of no tension for 5 minutes; again stretched to 500 per cent elongation, held another 5 minutes and this repeated several times. The same thing is done at both 0° and 100° C., and this accounts for some of the irregularities in the curves. It is to be noted that the friction pull at 100° C. is about half the pull at 0° C.

### Overcures

The effect of an overcure is one of the most interesting things that has been met in this work. It has already been noted that

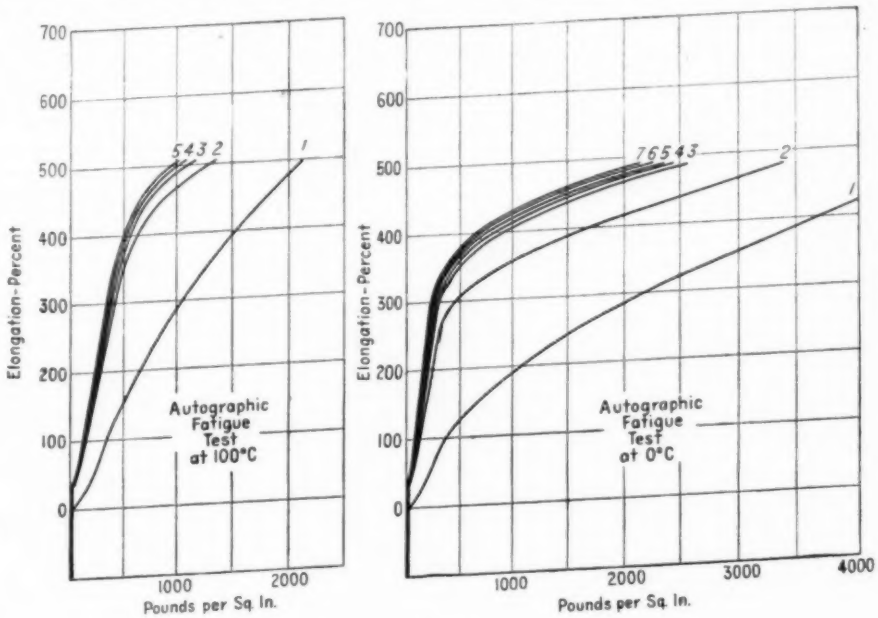



Fig. 14

it is noted that the stress-strain curves spread out a greater distance in this set test than they do in the so-called fatigue test. the length of time of cure is an important factor in the spread of these 0° and 100° C. stress-strain curves. It is also notable that

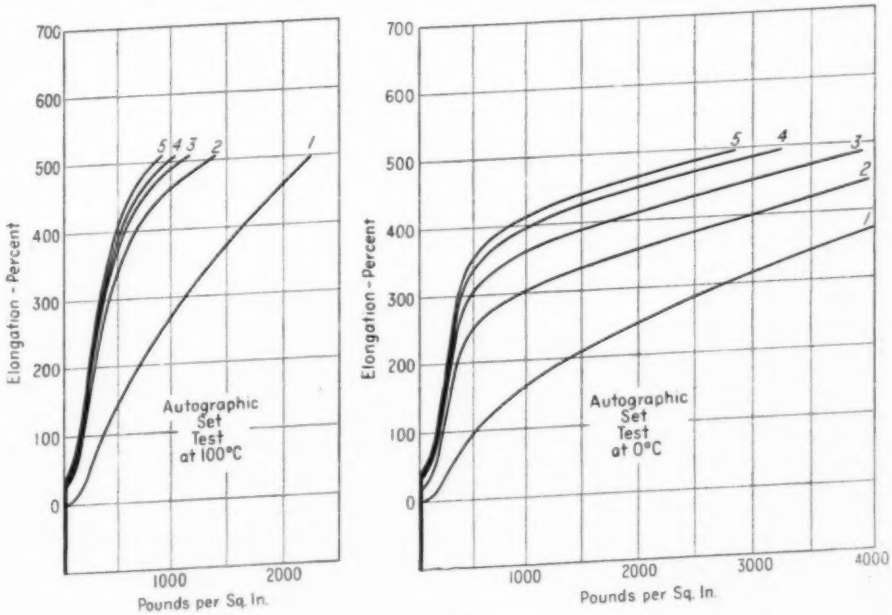



Fig. 15

### Friction Test

Figure 16 shows the results on stripping tests made on belting at 0° and 100° C. in water and 25° C. in air. The jaws of the testing machine separated at the regular rubber testing rate of 20 inches per minute which is too fast for friction testing and in an overcured compound the stress-strain curve drawn at 0° C. may not sharply indicate an overcure, but that the same overcured stock tested at 100° C. breaks exceedingly short.

In Figure 17 is shown the 0° and 100° C. stress-strain curves for a compound that has been cured at 60 and 90 minutes at 141° C. The 60 minute cure is possibly a very good one and there is noth-

ing in either the 0° or 100° C. stress-strain curve to indicate anything wrong. But when that same stock is cured 90 minutes at 141° C. and tested at 100° C. it breaks at an elongation of slightly over 200 per cent, while that same stock tested at 0° C. shows a fairly normal stress-strain curve with no indication of shortness. This breaking short at 100° C. is not an experimental error, accident or freak, but it occurs in any overcured stock. Some stocks have a much wider curing range than others, but it appears that testing at 100° C. shows up an overcure definitely different than any other method now generally known. It would seem that the effect of overcure might be very serious on the service qualities of a stock subjected to temperatures as high as 100° C.

### Anti-Oxidants

An attempt has been made to show in Figure 18 the effect of an anti-oxidant as used in a typical tread stock. The stocks were made identically the same except that one contained an anti-oxidant. Both stocks were cured at 15-30-45 and 60 minutes at 141° C. All four cures of both stocks were aged 7 days in a Geer oven at 70° C. The 15 minute cure could undoubtedly be called an undercure and the 60 minute cure an overcure. After 7 days aging in the Geer oven stress-strain curves were drawn on all these stocks at 0° and 100° C. The upper half of the figure shows a successive shortening of the stress-strain curves as the cure progressed from 15 to 60 minutes. This shortening occurs in the case of both the 0° and 100° C. curves, indicating that the Geer oven is not primarily overcuring the stock, for if such were the case only the 100° C. stock would break short while the 0° C. stock would still have a good elongation, but instead it indicates that the Geer oven is causing aging or deterioration, that is not overcuring in itself. It also shows that the longer cures deteriorate faster than the shorter cures in a Geer oven.

The lower half of Figure 18 shows that the addition of an anti-oxidant helps preserve physical properties of the stock particularly when given an overcure, preventing it from breaking short. It might also be added that the addition of an anti-oxidant does not in any way affect the relative spread between the 0° and the 100° C. stress-strain curves.

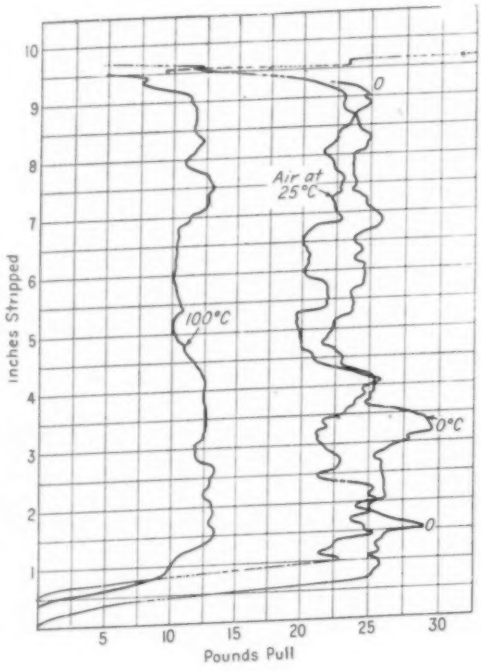



Fig. 16

### Future Work

Data have been obtained in the form of autographic stress-strain curves at 0° and 100° C. on about 250 compounds including 4 secondary vulcanizing agents, 12 anti-oxidants, 20 softeners, 30 accelerators, 36 fillers and some other special materials. These data will be subject matter for future publication.

Apparently most of the laboratory work that has been done on this general subject to date has been analytical, or diagnostic in nature. The second phase of the work normally would be to determine a remedy for the condition if we consider that it is a troublesome matter that the stress-strain properties of vulcanized rubbers change with temperature. For some purposes it might be a splendid improvement in compounding if a rubber stock could be made that would give constant stress-strain properties at all temperatures within reasonable ranges. Some work has been done in that direction, and it is undoubtedly possible to make compounds which when properly cured will actually show higher stress-strain figures at some elongations when tested at 100° C. than when tested at 0° C. Further work along that line is now in progress.

It is now planned to construct a new testing machine equipped with a tank 48 inches in length that will permit the stretching of a test piece to the breaking point and to equip this tank not with electric heaters for heating the liquid, but also with refrigerating coils for cooling the liquid and to use liquids for heating and cooling the rubber test piece to a wider range of

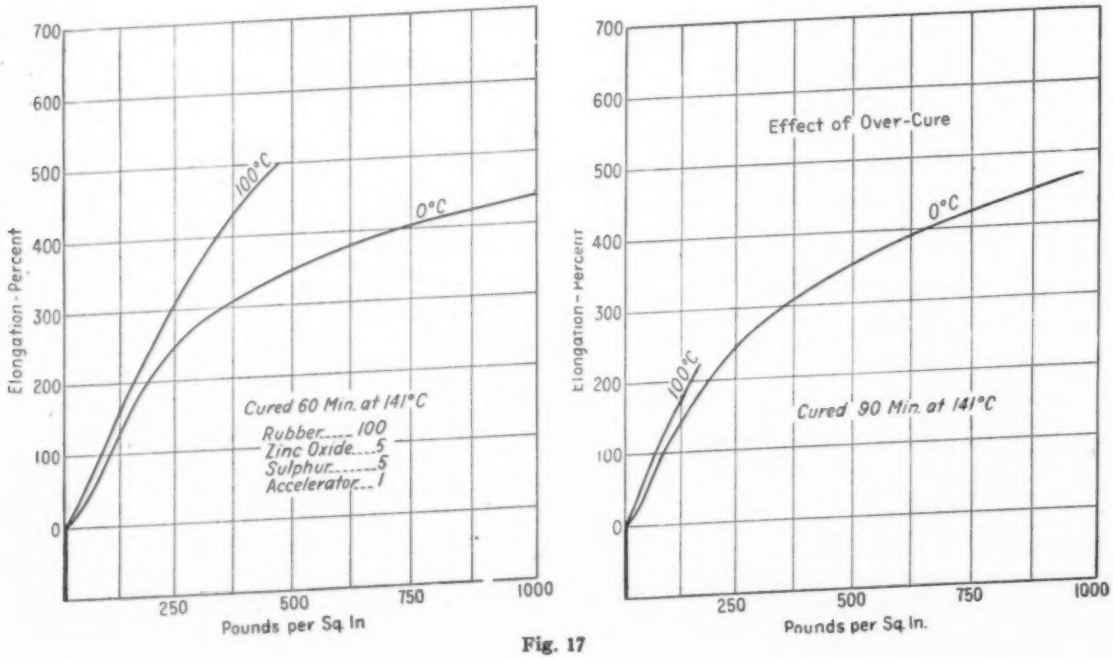



Fig. 17

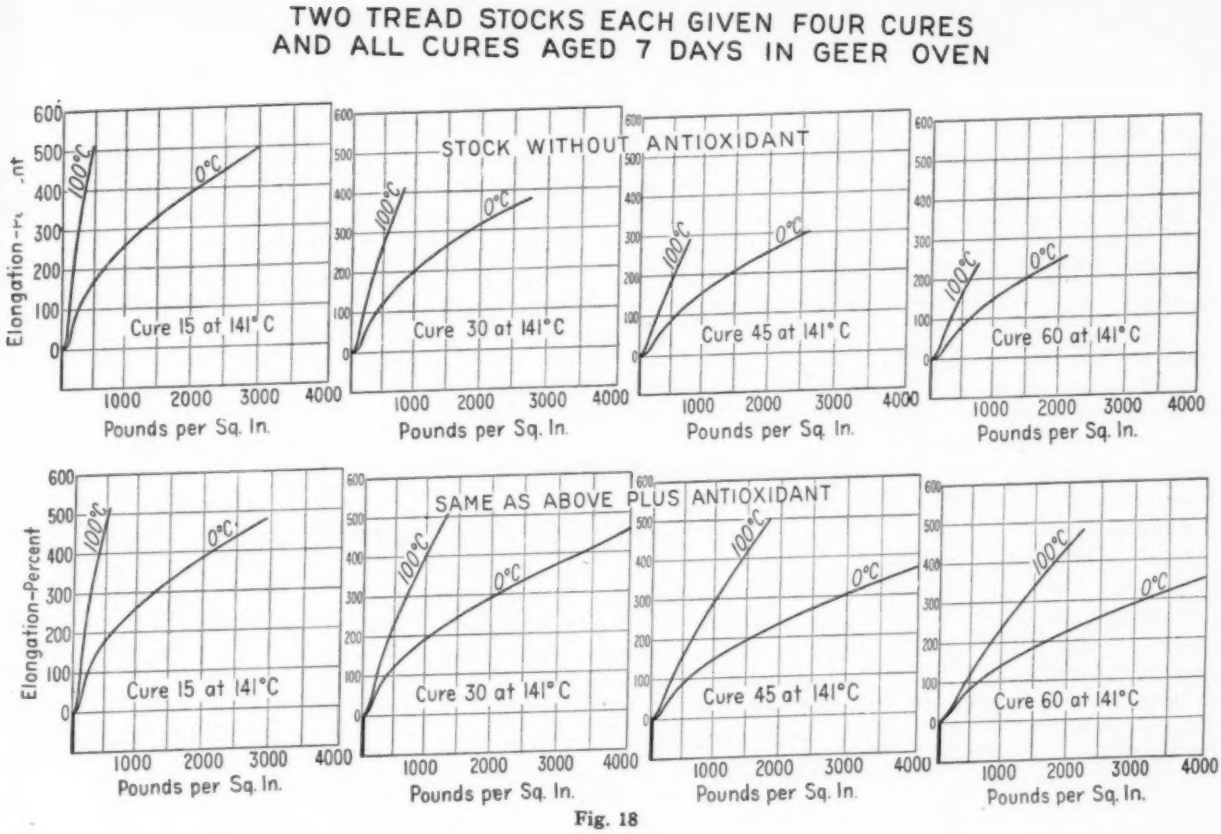



Fig. 18

peratures than the 0° and 100° C. used in these experiments.

**Summary**

ethod has been devised for testing rubber at various temperatures by putting a simple attachment onto a commercial testing machine.

Wide variations have been found in the stress-strain curves on the same stock at different temperatures.

The stress-strain properties at different temperatures vary for different rubbers.

The state of cure causes a wide variation in tests at various temperatures.

The amount of sulphur used is a factor in the stress-strain relationship at different temperatures.

Successive stresses on the same piece of rubber show large decreases after the first or second stress.

Stripping tests on frictions show much lower strength at 100° C. than at 0° C.

Overcures are indicated prominently when stocks are tested at 100° C.

Artificially aged rubber tested under these conditions shows a very marked deterioration which may be offset by antioxidants.

# Aluminum Paint[1]

MANY rubber manufacturing companies find that aluminum paint gives satisfactory results in factory interiors. Its outstanding advantage is that sulphur fumes have no tarnishing effect upon it. Since one coat will hide any under color and is generally sufficient for interior work it is very economical. The fact that it does not tarnish enables it to retain its highly reflective quality of 70 per cent undiminished for a long period.

Aluminum paint is readily made by stirring the bronze powder into a suitable oil or varnish vehicle such as kettle bodied boiled linseed oil. The flake form of bronze powder particles gives rise to the phenomenon of "leafing" or gathering on the surface of the paint vehicle in formation resembling the overlaying of fallen leaves. When applied as a paint coat this effect gives a surface practically equivalent to a sheet of polished aluminum in light reflecting and hiding power. It also presents a non-tarnishing polished surface.

The special qualities of aluminum paint that make it particularly suited for rubber factory and laboratory interiors are the hiding power of a single coat, its great light reflecting power, resistance to the tarnishing effect of sulphur fumes in press rooms and curing departments, the ease with which the aluminum surface can be cleaned and the highly protective effect of the metal coating on the underlying film of paint vehicle.

The amount of aluminum powder required to make a durable paint is from 20 to 25 per cent by weight. In general two pounds of powder per gallon of oil base vehicle will meet the requirements. Too little powder lowers the hiding power and the durability of the paint, while too much interferes with smooth spreading and leveling of the paint. The recommended vehicle is either a long-oil or spar varnish or kettle bodied boiled linseed oil.

[1] Data supplied by the Aluminum Co. of America, 120 Broadway, New York, N. Y.

## Styrene for Rubber Compounding

Styrene ($C_8H_8$), an oily, colorless liquid, is suggested as a plasticizing rubber compounding ingredient. While hitherto available only in small quantity by distillation from plant resins, the United States Bureau of Mines points out that about 8,000,000 pounds might be recovered yearly as a by-product of the fuel gas industry if a suitable process be developed. It and another chemical, indene, change from a volatile state and polymerize as a gummy substance which clogs gas meters, and the removal and cleaning of the latter are a source of much expense.

# EDITORIALS

## *Specifications Versus Service*

MANY rubber manufacturers, while conceding the validity of the principle of ordering solely on specifications, contend that purchasers may lose as often as win by a too strict insistence on adherence to stipulations. Like many another principle, it may be all right in the abstract but not always in the concrete. These rubberware makers regret the growing trend toward ordering on specifications rather than on proved quality and service. They note that many railroad companies and other large users of rubber goods regard the latter merely as general supplies, and that, often using old compounding formulas as a basis, they require bidders to submit price proposals on the express condition that hose or other articles shall contain a certain minimum of raw rubber, a fixed maximum of reclaim, a definite percentage of sulphur, a limited allowance of named fillers, cotton of particular weight and weave, etc. The requirements are often simple enough and many factories find it easy and profitable to conform to them.

But purchasing agents often fail to realize that the rubber trade is not standing still. In fact, it was never more alert and progressive. Basic materials may not have changed greatly in character or proportions employed in recent years, but countless innovations have come in auxiliary substances and in the methods of handling them. It is related that one buyer, anxious to get rubber goods having the utmost abrasion resistance, put especial stress on the percentages of sulphur and carbon black in the compound. The manufacturer approached suggested the addition of selenium, but the buyer, fearing that an advantage would be taken to cheapen the quality, warned the manufacturer that no modification would be tolerated, and he got exactly what he ordered.

Another buyer gave the same manufacturer a carte blanche order for similar goods and got a modern selenium mixture at no higher cost. When Buyer No. 1 chanced to compare abrasion tests with Buyer No. 2 and realized that he had acquired a big lot of relatively inferior merchandise by laying undue emphasis on specifications, he admitted that even purchasing agents can learn something and forthwith resolved that he would trust more in rubber makers' honor, skill, and reputation and less in inflexible formulas of yesteryear. Research has demonstrated that the quality of rubber goods may be determined quite as much by their non-rubber as their rubber components, and hence it follows that mere specifications of chemical composition afford no infallible criteria of rubberware excellence.

## Passing of Sir Henry A. Wickham

*If he who makes two blades of grass grow where one grew before be a benefactor of mankind, how shall a man be characterized to whose enterprise may be credited the growing of 80,000,000 rubber trees where none had grown before? Plainly he is a helper of humanity who merits the gratitude not only of his own nation, but who makes all civilization his debtor. Such tribute was well earned by Sir Henry Alexander Wickham, who recently passed away in England at the age of eighty-two. The Grand Old Man of the rubber industry was one of the few who foresaw half a century ago the need of a much greater and more dependable supply of rubber than could be obtained from Brazil. Unable to negotiate for the transfer of Hevea Brasiliensis seeds for culture in British tropical possessions, he did as many another empire builder had done, took the initiative and spirited away that which his nation needed. If he were not very meticulous in his famous coup, his countrymen doubtless feel that the end justified the means employed. He added immeasurably to the world's wealth and welfare, and the value of his achievement is realized when we reflect how our present progress might have been impeded had this resourceful pioneer not undertaken his epochal adventure.*

* * *

## *Chemistry Versus Stock Exchange*

WHAT growers may take as a threat and consumers hail as a promise is an intimation by an eminent chemist, James C. Irvine, University of St. Andrews, Scotland, that the chemist is in a better position than ever, should the occasion arise, to come to the relief of industry with a satisfactory synthetic rubber. "The chemist," he told American confreres at Evanston, Ill., recently, "is, for one thing, determined that if there is any more juggling with the price of rubber he will look over his notes on methyl isoprene and see what can be done in matching the chemical laboratory against the stock exchange." Our friends, the molecule manipulators never lose hope; and often their hopes are realized.

* * *

ALTHOUGH HERE AND THERE A DISCORDANT NOTE MAY be heard, the general sentiment expressed in England regarding the peaceful penetration of American tire manufacturers into the British field is distinctly favorable.

# What the Rubber Chemists Are Doing

## Volatile Constituents of Carbon Black[1]

C. R. JOHNSON

*Godfrey L. Cabot, Inc., Boston, Mass.*

THIS paper in condensed form presents very important data regarding the volatile constituents of carbon black and their influence on the value of the material as a reinforcing ingredient in rubber mixings.

For a long time it was assumed that carbon black was practically pure carbon. This error was no doubt due to the fact that when burned in air or oxygen no ash was found. In 1912 Cabot emphasized the fact that carbon black was not pure carbon; that carbon blacks showed on combustion from 85 to 95 per cent of carbon and the presence of hydrogen, oxygen, and nitrogen. Its ability to absorb moisture was already recognized.

Here we have a substance which ultimate analysis shows to contain carbon in large percentage, together with oxygen, hydrogen, and nitrogen. What is the exact status of these last three elements in this material? Do they exist as adsorbed gases? Is the oxygen there as elementary adsorbed oxygen, or is it present in the form conceived by Langmuir in his work with the carbon filament lamp containing oxygen in varying quantities—to wit, in quasi-chemical union at the surface? Is there an excess amount of oxygen there beyond the requirements of the Langmuir concept? Is there any carbon monoxide or carbon dioxide present as adsorbed gas? Or are these gases simply the product of reactions taking place when the carbon black is heated?

Is the hydrogen there as elemental gas adsorbed as such or is it in definite chemical combination with the carbon? These questions only emphasize the fact that our knowledge of the composition of carbon black is far from complete. When one considers the situation when carbon black is manufactured these possibilities do not seem at all fantastic. A mixture of methane, ethane, and small quantities of higher hydrocarbons is subjected to incomplete combustion. According to the latest concepts of the mechanism of the combustion of gases, carbon can be formed by the cracking of the ethane or methane or as the result of partial combustion. At any rate we can assume that just at the moment of formation of the black we have present oxygen, carbon dioxide, carbon monoxide, hydrogen, nitrogen, and even unburned natural gas.

It was because of the discovery by the author of important relationships between the amount of volatile matter contained in carbon black and the reenforcing properties of this material when vulcanized with rubber that a study of the nature of these volatile constituents was undertaken. The correlation of a large number of rubber tests using carbon black as a reenforcing pigment with the amount of volatile matter contained in the carbon blacks showed that the amount of volatile matter was variable and that when it varied beyond certain limits, the carbon black was deficient as a reenforcing agent and retarded the rate of vulcanization.

Comparison of a large number of volatile-matter determinations of carbon black with the physical rubber tests, revealed a very definite relationship, which may be stated as follows: Whenever the volatile matter of a rubber black rises above a particular limit for that black its reenforcing properties in rubber compounds suffer and the cure is retarded. This value can be fixed for any black from any factory but varies slightly for every black.

**TABLE 1—RELATION BETWEEN VOLATILE-MATTER CONTENT OF BLACKS AND PHYSICAL PROPERTIES OF RUBBER**

| Sample | Volatile Matter % by wt. | Tensile at Break 40 min. 60 min. 80 min. Kg. per sq. cm. | | | Modulus at 400% 40 min. 60 min. 80 min. Kg. per sq. cm. | | |
|---|---|---|---|---|---|---|---|
| 143 | 5.10 | 290 | 305 | 306 | 118 | 148 | 161 |
| 145 | 4.91 | 296 | 311 | 310 | 119 | 141 | 155 |
| 163 | 4.60 | 305 | 317 | 306 | 122 | 149 | 158 |
| 112 | 5.60 | 256 | 288 | 290 | 99 | 123 | 179 |
| 157 | 5.73 | 264 | 297 | 302 | 109 | 139 | 153 |
| 91 | 6.19 | 236 | 266 | 272 | 89 | 109 | 109 |
| 16 | 6.67 | 225 | 273 | 268 | 103 | 128 | 142 |
| 308 | 7.56 | 128 | 155 | 160 | 66 | 85 | 96 |

Table 1 gives the volatile matter of samples from the same factory compared with their physical tests. The first three samples have a low volatile content and test well. The next two are border-line cases with moderately high volatile and fair rubber tests. The last three are high volatile and show poor tests.

The samples of black were mixed by the following formula, which is designed to bring out differences of carbon black when vulcanized with rubber. In some regular tread compounds these differences are not so pronounced.

| | Parts |
|---|---|
| Smoked sheets | 93.0 |
| Carbon black | 35.0 |
| Zinc oxide | 3.0 |
| Sulphur | 5.0 |
| Diphenylguanidine | 0.75 |
| | 136.75 |

The mix was aged 24 hours, vulcanized at 141.5° C., and tested after 24 hours' aging.

The physical tests of rubber compounds containing each of the five samples considered in this paper are given in Table 2. The same mixing formula is used in each case.

**TABLE 2—RUBBER TESTS OF CARBON BLACK SAMPLES**

| Sample | Time of Cure at 141.5° C. Minutes | Tensile at Break Kg. per sq. cm. | Elongation at Break Per Cent | Tensile at 400% Elongation Kg. per sq. cm. | Hardness |
|---|---|---|---|---|---|
| A | 40 | 310 | 630 | 141 | 65 |
| | 60 | 324 | 613 | 163 | 68 |
| | 80 | 301 | 555 | 178 | 70 |
| B | 40 | 225 | 602 | 103 | 60 |
| | 60 | 273 | 612 | 128 | 63 |
| | 80 | 268 | 580 | 142 | 66 |
| C | 40 | 300 | 675 | 118 | 61 |
| | 60 | 308 | 610 | 148 | 65 |
| | 80 | 303 | 603 | 161 | 69 |
| D | 40 | 167 | 610 | 65 | 52 |
| | 60 | 186 | 580 | 82 | 56 |
| | 80 | 193 | 570 | 92 | 59 |
| E[a] | 40 | 238 | 610 | 81 | 60 |
| | 60 | 264 | 603 | 101 | 63 |
| | 80 | 257 | 598 | 110 | 65 |

[a] Four times as much diphenylguanidine was used with this sample.

The long blacks of high volatile content show very poorly in these tests. In the case of sample *E* it was not possible to get sheets for test with the regular formula at the usual time of vulcanization because of extreme undercure. Accordingly, a mixture was made using four times the amount of diphenylguanidine as the accelerator. Evidently in the case of high-volatile blacks some side reaction with the accelerator occurs which so diminishes its concentration that there is no longer enough to accelerate the vulcanization reaction properly.

Some technologists who have specialized on the problems in connection with solid tires for motor trucks have expressed the opinion that the cause of blowouts in solid tires is the evolution of gas from the carbon black. That is not so, because no gases are evolved in carbon black until a temperature considerably above that occurring in solid tires when run under heavy load and high speed. It can be fairly safely concluded that the gas which comes from solid tire blowouts is from the breakdown of the rubber hydrocarbon from the heat generated in the tire, instead of the gas from carbon black.

Several instances of the difficulty encountered in the mixing of some lots of carbon black with rubber, especially in internal type mixers, have recently been called to the writer's attention. The temperature of the mix rises so high that the process has to be stopped. One instance has been given when this took place on an open mill. Two samples exhibiting this condition have been examined and found to be abnormally low in volatile matter. Might it not be possible that the gas contained in carbon black acts as a lubricant to assist dispersion into the rubber and when the black is deficient in gas, an excessive amount of heat is generated in the mixing by the lack of lubrication?

[1] "Carbon Black I. A Study of Its Volatile Constituents." Presented before the Division of Rubber Chemistry at the 75th meeting of the Am. Chem. Soc., St. Louis, Mo., April 16 to 19, 1928. Courtesy of *Indus. & Eng. Chem.*, Sept. 1928, p. 904.

# Dispersion of Pigments in Rubber[1]

## I—Microscopical Studies of Agglomeration and Flocculation

ERNST A. GRENQUIST

*The Fisk Rubber Co., Chicopee Falls, Mass.*

IN this paper the author reviewed the literature of his subject dealing chiefly with the factors that influence and regulate the dispersion of pigments in rubber, especially agglomeration and flocculation. After description of the experimental part the author discusses the results as follows:

Pigments dispersed in rubber show in many instances similar behavior to dispersed particles in other systems. It has been found that agglomeration of pigment particles on the mixing mills usually takes place around any larger nuclei present in the rubber, such as dust, resin, foreign matter, and even larger compounding ingredients such as sulphur crystals. There are indications of an antagonistic action between zinc oxide and carbon black in regard to dispersion. The colloidal behavior of the particles during vulcanization shows interesting features. The beginning of vulcanization, under certain circumstances, seems to be characterized by a preliminary improvement in dispersion. Whether it is an actual improvement or only apparent, depending on volume increase of the rubber and change of the index of refraction of the rubber-sulphur mixture, cannot be ascertained at the present state of the investigations. Later during the cure a flocculation of previously dispersed particles takes place in connection with increased mobility of the rubber and the pigments.

This flocculation of dispersed particles takes place even in a mixture of rubber and carbon black alone on heating, although not to such a great extent as when other ingredients are present. The tendency to flocculate was most pronounced with the fine particle-sized carbon black, although the other types of blacks, such as lamp and thermatomic, showed flocculation to some extent.

The particles may draw together in more or less dense accumulations where the surface of the particles is in contact with the rubber matrix at every point. Groups or lumps especially of carbon black are formed in connection with the incorporation or melting of large sulphur crystals. There are also cases where small agglomerates draw together during vulcanization and form larger aggregates, and other cases where agglomerates increase in size at the expense of surrounding dispersed particles.

Finally, we have the case of chemically active pigments where flocculation seems to be connected with purely chemical reactions. All internal flow in the compound, however, comes to a sudden stop at a certain stage of the vulcanization process and dispersive changes no longer occur, except during the cooling down of the system in connection with volume changes of the rubber. The carbon black particles in highly compounded treads seem to float through the rubber in an unorientated network, which possibly is a measure of the reenforcement of the system. The forces which regulate the dispersive changes in a rubber-pigment system are of both theoretical and practical importance and will be subject for future investigations. An understanding of the subject can only be obtained with a more thorough knowledge of the structure and physico-chemical properties of rubber and pigments themselves and of the nature of the vulcanization process.

[1] Presented before the Division of Rubber Chemistry at the 75th Meeting of the Am. Chem. Soc., St. Louis, Mo., April 16 to 19, 1928. Courtesy of *Indus. & Eng. Chem.*, Oct., 1928, pp. 1073-78.

## New York Group Rubber Meeting

The second 1928-29 meeting of the New York Group, Rubber Division of the A. C. S. will take place at the Town Hall Club, 123 West 43rd St., at 6:30 p. m. November 14. Following the dinner the guest of the evening, Dr. Philip Schidrowitz of London, England, will talk on "Rubber as a Substitute for Leather." Dr. Schidrowitz is internationally famous for his work in the chemistry of rubber and the development of a new technology of rubber by which articles are made direct from vulcanized latex.

Reservations at $2 each for the dinner and lecture should be made with Donald F. Cranor, Binney & Smith Co., 41 East 42nd St. New York, N. Y. not later than November 10.

# Baryta White

## *A Refined Missouri Barytes*

C. P. DeLore

RUBBER compounders in all lines of rubber goods production are familiar with the merits of barytes as a cheap, inert material for producing rubber stocks of specific value. Largely because of its chemical permanence and texture when suitably prepared, barytes has been employed from the earliest days in the manufacture of rubber goods. Numerous commercial grades of ground barytes have always been available differing in degrees of fineness, purity and color variations from pure white to dark off color grades. These conditions have long persisted to the great disadvantage of compounding due to the use of mixed quality rock, and the ineffective buhr mill grinding and bolting equipment employed. When specially pure white barium sulphate was required for rubber work compounders usually depended upon blanc fixe, chemically precipitated barium sulphate.

After many years of research and experiment in water grinding and chemical purification, a grade of standardized, high quality baryta white has been produced from the barytes rock occurring in Missouri. The industry of preparing this refined ground domestic barytes of high quality has centered naturally at St. Louis within easy access of the crude mineral deposits. Refined water ground Missouri barytes, characterized by its soft, smooth lubricant-like texture is standardized as to purity, color, fineness and uniformity making it highly desirable for rubber compounding as well as for other purposes.

The most commonly present impurities occurring in barytes are iron compounds and they are responsible for the discoloration found in the ground raw product. These impurities are removable by cooking the ground material with strong sulphuric acid. This treatment converts the iron oxides present into water soluble sulphates. In order to accomplish the removal of these sulphates and the residual free acid as completely as possible, the treated ore is subjected to a series of washings with water. Hitherto it was found impossible to wash ground barytes free from all traces of iron compounds or of sulphuric acid. Therefore the residual iron compounds would oxidize and discolor the finished product.

Recently, however, a successful process has been perfected for the complete removal of iron and acid, giving a material that will not discolor on exposure to the atmosphere nor be affected by chemical action of any other compounding ingredients. The new product is, in fact, an unalterable white pigment highly suitable for rubber mixings and other purposes where permanent color and chemical inertness are desired.

Water grinding compared with dry grinding has the superiority of producing greater uniformity of fineness because the resulting particle sizes of the material are classified by a system of water flotation and settling. This step is followed by silk bolting the reground dried washed stock, thus completing the preparation of one of the oldest and most dependable rubber compounding ingredients and one that is regaining popularity in current compounding especially for tire and tube work.

## Titanium Dioxide Harmless

Titanium dioxide, the white pigment which is finding much favor as a rubber compounding ingredient, gets a clean bill of health from two German researchers, Lehman and Herget. In *Chemiker Zeitung*, Vol. 51, pp. 793-4, they state that in a study of the physiological effects no adverse effect was noted externally, and that it was even fed to various animals for six months without doing any harm.

## Solvents and Rubber Plating

That rubber-plated metals have when used for chemical containers a wide range of usefulness is now generally recognized; but in order that their limitations as well as their advantages may be better estimated a German chemist has lately been studying the action on such metal coating of various organic solvents. The latter included isobutyl, propyl, and butyl alcohols, acetone and various ketones, dichlorhydrin, tri-acetin, etc. In most instances, it is reported, the coatings softened and lost their value, and indicating at least the inadvisability of permitting chemicals in the class named to remain in contact with metal containers thus coated.

# American Rubber Technologists

THE INDIA RUBBER WORLD'S *brief biographies of American rubber technologists are valued by our readers because they record the accomplishments of the men in charge of the research, development and control work of the rubber manufacturing industry.*

*Technical superintendents, chemists, process and development engineers in rubber manufacturing and reclaiming plants, research, testing and service laboratories are invited to send their biographical data to us for publication.*

**WILLIS ALEXANDER GIBBONS,** chem. *b.* Nov. 1, 1888, Long Island City, N. Y.; A. B., Wesleyan U. 1910; M. A. Wesleyan U. 1911; Ph.D., Cornell U., 1916. Asst. in chem. Cornell U., 1910-1912; research chem. U. S. Rubber Co., 1912-1917 and 1919-1922; in charge of research dept., Gen. Laboratories U. S. Rubber Co., 1922-1928; director, Gen. Laboratories since 1928. First Lieut. 1917; Capt. Ordnance Dept., 1918-1919; Asst. Military Attaché American Embassy, London, Eng., 1917-1918. *Author:* Papers on electrochemical oxidation of hydrazine; heat of dilution; addition compounds of aldehydes and ketones with organic acids; rubber solutions. Patents on vulcanization of rubber; applications of latex; rubber compounding; balloon and airplane fabrics; construction of rubber articles. *Member:* Alpha Delta Phi, Phi Beta Kappa, S. A. E., Chem. Soc. (London), Am. Chem. Soc.; member Executive Committee Rubber Division A. C. S. 1925-1926; chairman N. Y. Group, Rubber Division, A. C. S., 1927-1928; chairman, committee on Physical Testing Rubber Division A. C. S. *Address:* 357 Park St., Montclair, N. J.

**Walter W. Vogt,** chem. *b.* Apr. 5, 1896, Clyde, O., A. B., Oberlin Coll., 1917; with Goodyear T. & R. Co., Akron, O., since 1917 on research work, compounding research and development of tests. Manager of compounding. Private, Signal Corps, U. S. A., 1918-1919. *Member:* Am. Chem. Soc. *Author:* Several papers on physical properties of rubber, aging, accelerators, etc. Ex-chairman Physical Testing Committee, Rubber Division A. C. S. *Address:* 189 Pasadena Ave., Akron, O.

**Ralph B. Appleby,** chem. *b.* Nov. 16, 1901, Aurora, Mo.; A. B. Drury Coll., 1923; A. M., U. of Mo., 1925; asst. city chem. of Springfield, Mo., 1922; Roeser & Pendleton Gasoline Co., Breckenridge, Texas, 1923; Instructor in gen. chem., U. of Mo., 1924-1925; B. F. Goodrich Co., Akron, O., 1925-1927; Am. Cyanamid Co., New York, N. Y. since 1927. *Author:* "The Effect of Prolonged Treatment with Ozone on the Lubricating Value and Some Other Properties of Oils." *Member:* Am. Chem. Soc., Alpha Chi Sigma, Gamma Alpha. *Address:* American Cyanamid Co., 535 Fifth Ave., New York, N. Y.

**Paul W. Lehman,** engr. *b.* Cannelton, Ind. B. S. M. E., Purdue U., Lafayette, Ind., 1913; mech. engr., American Heating & Ventilating Co., Indianapolis, Ind., 1913-1917; Ordnance Dept. U. S. A., 1917-1918; mech. engr., Frederick Stearns & Co., Detroit, Mich., 1918-1921; plant engr., Cupples Co., St. Louis, Mo., 1921-1924. Designing engr., Fisk Rubber Co., Cudahy, Wis., since 1924. *Member:* Masons, Engineers Soc., Milwaukee, Wis., A. S. M. E. *Address:* 587 Herman St., Milwaukee, Wis.

**Morris Omansky,** chem. *b.* Dec., 1889, Kieff, Russia; Boston public schools; S. B., Mass. Inst. Tech. 1911; chem., Boston W. H. & R. Co., Cambridge, Mass., 1911-1917; chf. chem., Plymouth Rubber Co., Plymouth, Mass., 1917-1920; chf. chem., Needham Tire Co., Needham, Mass., 1920-1922; consulting chem., Respro Industries, 1920; consulting chem., The Barrett Co., 1921-1924; chf. chem., Plymouth Rubber Co., 1922-1924; consulting chem. management, research, etc. since 1924. *Author:* Process of manufacture of reclaimed rubber, sulphur chlorinated oils, etc. Patents on processing carbon black; reclaiming rubber for insulated wire covering; processing fabrics. *Member:* Amer. Chem. Soc. *Address:* 15 Wardman Road, Roxbury, Mass.

**Jonas E. Warrell,** chem. *b.* Apr. 3, 1890, Conshohocken, Pa., Drexel Inst., Philadelphia, Pa.; lab. and tire dept. Lee T. & R. Co., Conshohocken, Pa., 1913-1917; U. S. Army service 28th Div. Headquarters, 1917-1919; chf. chem., subsequently production manager, Carlisle Tire & Rubber Co., Carlisle Pa. since 1924. *Author:* Research on inner tubes. *Member:* Am. Chem. Soc., Am. Legion. *Address:* 214 South West St., Carlisle, Pa.

**Clyde Coleman,** chem. *b.* Galesburg, Ill.; B. A., 1909; M. A., 1910, Williams Coll.; Ph.D., Chicago U., 1916; Federal Dyestuff & Chem. Co., 1915-1918; Du Pont Dye Works, 1918-1921; supt. New Brunswick plant, E. R. Squibb & Sons, 1921-1922; supt. Lock Haven plant, American Aniline Products, 1922-1923; Althause Chemical Co., Reading, Pa., 1923-1926; gen. labs., U. S. Rubber Co., since 1926. *Member:* Phi Beta Kappa, Sigma Xi, Gamma Alpha. *Address:* 87 Prospect St., Passaic, N. J.

**Joseph T. Whalen,** engr. *b.* Oct. 6, 1888, Meriden, Conn.; A. B., Holy Cross Coll., Worcester, Mass., 1912; underground cable tester A. T. & T Co., 1912; inspector, Western Electric Co., 1913-1914; methods engr., The Whitney Blake Co., 1914-1924; pres. and treas., The Accurate Insulated Wire Co., New Haven, Conn. *Address:* 85 Willow St., New Haven, Conn.

**Harry E. Campbell,** supt. *b.* Oct. 18, 1877, Akron, O.; Akron public schools; druggists' sundries dept., B. F. Goodrich Co., Akron, O.; foreman belt room, B. F. Goodrich Co., foreman belt room, Republic Rubber Co., Youngstown, O; supt. puncture proof inner cases, Atlas Rubber Co., Buffalo, N. Y.; supt tire dept., Lee T. & R. Co., Conshohocken, Pa., 1911-1913; depts. of solid tire, plant efficiency, heels, soles and general molded goods, The Goodyear T. & R. Co., Akron, O., 1913-1917; supt. mechanical goods div. same company, since 1917. *Address:* 116 W. Center St., Akron, O.

**Elmer Ellridge Dearth,** chem. *b.* Feb. 4, 1891, Lowell, Mass.; chem. and dyeing, Lowell Textile School, 1912; chem. Federal Rubber Co., Cudahy, Wis. 1912-13; fabric dept., 1913-1914; specification dept. 1914-1917; indus. engr., Lee T. & R. Co., Conshohocken, Pa., 1917-1919; asst. secy. and treas. N. J. Car Spring & Rubber Co., Jersey City, N. J., 1919-1922; asst. to fact. mgr., Fisk Rubber Co., Fed. Div. Cudahy, Wis., 1922-1925; genl. supt., Fed. Div. Cudahy, Wis., 1925-1927; mgr. production development, Fisk Rubber Co., Chicopee Falls, Mass., since 1927. *Member:* Director, Tire & Rim Asso., S. A. E., Elks, Masons, Shriner. *Address:* Fisk Rubber Co., Chicopee Falls, Mass.

**Louis A. Hurley,** elec. engr. *b.* Oct. 19, 1892, Lafayette, Ind.; B. S., Purdue U., 1916; Positions: Canadian Crocker-Wheeler Co., 1910-1912; Apperson Motor Car Co., 1914; Lake Erie & Western R. R. Co., 1915; asst. mgr. efficiency div., the Goodyear T. & R. Co., Akron, O., since 1916. *Address:* 215 Oak Park Blvd., Cuyahoga Falls, O.

**Hal Keith Jennings,** engr. *b.* May 18, 1896, Murray, Ky.; coll. of mech. eng. U. of Ky.; Positions: Babcock & Wilcox Co., 1916-1917; First Lieut. U. S. A. Heavy Artillery, 1917-1918; plant engr. Firestone T. & R. Co., Akron, O.; efficiency work, costs and operation of power plant, 1917-1920; power eng., in charge of operation since 1920. *Member:* Pi Kappa Alpha A. S. M. E. *Address:* 234 N. 4th St., Cuyahoga Falls, O.

**Thomas K. Sherwood,** chem. engr. *b.* 1903, Columbus, O.; B. S. McGill U., 1923; M. S., M. I. T., 1924; asst. in chem. engr. M. I. T., 1924-1925; research asso., M. I. T., 1925-1926; lecturer in chem. engr., Worcester Polytechnic Inst., Worcester, Mass., 1925-128; development engr., Hood Rubber Co., Watertown, Mass., 1925-1928; asst. prof. chem. engr., Worcester Polytechnic Inst., since 1928. *Author:* Papers on heat transfer, flow of air and steam in pipes, gas absorption, drying, etc., "Heat Transfer to Rubber During Vulcanization." *Member:* Am. Chem. Soc., Am. Soc. Mech. Engrs. (Junior), Alpha Chi Sigma. *Address:* Worcester Polytechnic Inst., Worcester, Mass.

**Tress E. Pittenger,** chem. *b.* Jan. 9, 1894, Columbus, O.; B. A. in special chem., Ohio State U., 1916; laboratories, Firestone T. & R. Co., since 1916; asst. chem., 1916-1922; chf. chem., Canadian plant, 1922-1927; supt. of same plant, 1927-1928; supt. California plant, 1928. *Member:* Masons, Kiwanis Club, Los Angeles; Delta Tau Delta, Ohio State U. Varsity "O" Asso., Sphinx, Bucket and Dipper. *Address:* 2525 Firestone Blvd., Los Angeles, Calif.

# New Machines and Appliances

## Airplane Tube Mandrel

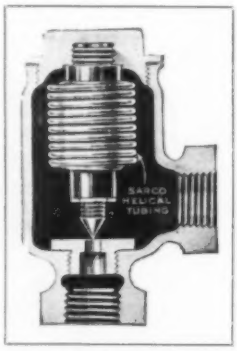
AS the first of its size the circular mandrel here pictured is worthy of note. It was built of plate aluminum ⅜

Giant Circular Mandrel

inches thick which was first rolled and welded into a straight tube and then bent to circular form. This feat is remarkable because of the success in producing a perfect circular mandrel from ⅜-inch plate of 9¾ inches cross-sectional diameter and 55 inches outside diameter. This is the size required for making a 54 by 12 inch giant airplane tube. The finished weight of the mandrel is 156 pounds, and relative size as compared to that of a man is shown by the illustration.—The Clyde E. Lowe Co., 2976 East 81 St., Cleveland, O.

## Self-Adjusting Steam Trap

THE illustration represents the latest development of a well-known steam trap. It is factory adjusted and works on widely varying pressures as well as on steady pressure. It is operated thermostatically, and although small it has a large valve area and a quick high lift when discharging. There are no toggle joints, levers, buckets, floats or other parts to become disarranged. The entire valve is of bronze, therefore it can not rust or become stuck fast.




No. 9 Sarco Trap

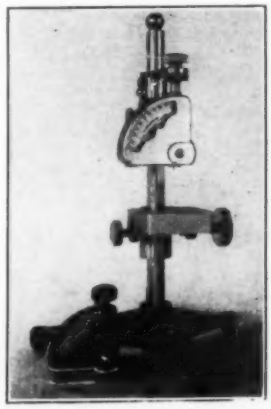
In its construction there is employed a unique helical bellows made from a seamless bronze tube. The helical form is greatly superior to the annular type of bellows as the movement is distributed over the entire number of corrugations with the result that the life of the bellows is greatly increased. The motor element never tires as it is never unduly stressed.

This appliance also has an extensive field of application as an automatic high pressure vent.—Sarco Co., Inc., 183 Madison Ave., New York, N. Y.

## Instruments for Testing Hardness and Elasticity

THE illustration represents an operating stand for use with the durometer or elastometer as indicated. These are improved adjustable instruments with new balanced abutment plates and impresser point shields.

Although small enough to be carried in the pocket to be used free handed when dismounted from an operating stand, the durometer contains a weigher beam much like large standard testing machines. This beam acts on a standardized resistor spring.



Durometer and Elastometer

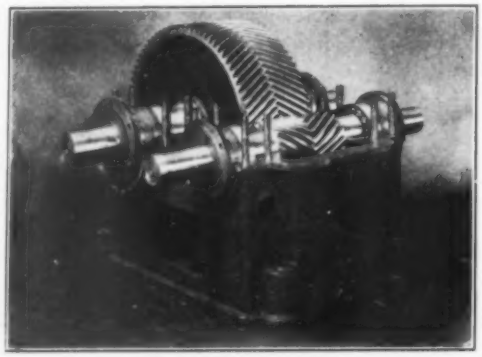
Among the noteworthy features incorporated in this improved instrument are: (1) Almost complete elimination of friction of moving parts. (2) Fool-proof against variable application pressure by enlarged abutment plate. (3) Impresser point and indicating mechanism protected from handling shocks by shiftable guard insuring dependability. (4) Beam scale movement not influenced by dust or grit. (5) Fully adjustable as to wear. (6) Quadrant dial facilitates easy and rapid reading for high speed testing. (7) Adaptable to testing pieces of comparatively small size. (8) Measures hardness in terms of kgs. per sq. centimeter.

The elastometer is provided with all of the seven features indicated for the durometer, thus making it more useful and dependable than before in its power of measuring elasticity by the simple application to a plane surface.—The Shore Instrument & Mfg. Co., Jamaica, New York, N. Y.

## Single Reduction Speed Reducer

THE illustration represents the Sykes single reduction series roller bearing type speed reducer. It is totally enclosed and self-contained and has come into general use for a variety of reasons. It is very compact, automatically lubricated, dust proof, oil tight, and often cheaper than the open train of gears so common a few years ago.

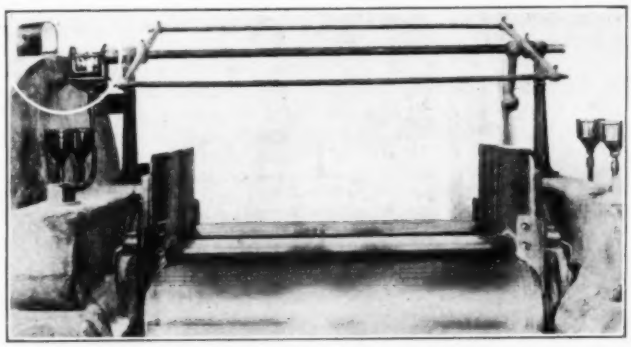
But the most important advantage is gained from the bearings being held properly in relation to each other by a sturdy design of housing so that once the gears are mounted by the manufacturer they will maintain their proper position which is difficult with open gears.



Farrel-Birmingham Speed Reducer

It is important to note that in this reducer, roller bearings having journal and thrust capacity are used. This permits holding the gears always in one position and permits no end float of either pinion or gear shaft, a fact considered impossible when herring - bone gears were used.

This reducer is said to be between 98 and 99 per cent mechanically efficient. It is protected from all abuse, and is therefore suitable for use under the most severe conditions. — Farrel-Birmingham Co., Inc., 344 Vulcan St., Buffalo, N. Y.



C-H Cradle Type Safety Switch

## Safety Switch for Mills

THE safety cradle switch here pictured installed on an ordinary rubber mill is used in connection with the C-H. magnetic clutch brakes for safety control of rubber and other powerful machinery of dangerous operation.

This safety switch is a small enclosed drum switch with its operating shaft designed for direct connection to the supporting shaft of the cradle arranged over the mill rolls. It has double pole, double break contacts, held closed when the cradle is in a horizontal position. A very slight movement of the cradle in either direction opens the contacts and causes stopping of the rolls.

The safety cradle switch is interlocked with the motor starter and the main motor circuit switch. When the motor is shut down the circuit to the clutch is open and cannot be closed until after the motor is again running at normal speed.—The Cutler-Hammer Mfg. Co., Milwaukee, Wis.

## Rubber Scrap Cutter

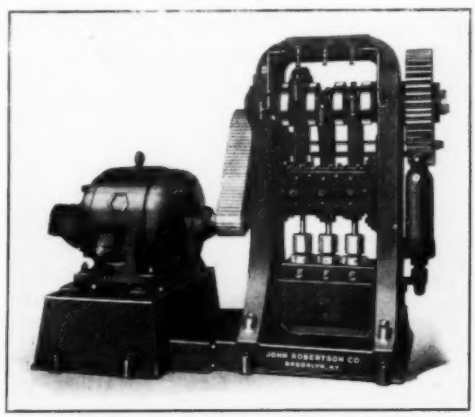
THE machine illustrated was designed for chipping logs in the process of making paper pulp but found adaptability in the reclaimed rubber industry for cutting up debeaded automobile carcasses preliminary to their finer grinding for digestion and devulcanization.

This machine comprises a very heavy cast iron pedestal and casing within which revolves at high speed a heavy metal cylinder carrying the cutters or knives. A combination inclined vertical feed spout receives the stock to be cut. The discharge spout is horizontal and at the back of the hog. The knife cylinder is heavily constructed of steel, the revolving parts weighing over 1-ton. In the cylinder are 12 knives that cut against 4 stationary knives or throat bars located around the lower half of the cylinder in the frame.

At the discharge opening there is a heavy sheet steel screen extending up over the rear of the cylinder inside the cover. The screen has perforations 1¼ inch in diameter or smaller according to the size to give the product. The material is therefore cut and recut a number of times and is thrown against the screen at a high velocity. The fines pass through and are carried away by a suction air current.

There is only one adjustment to the machine, that of the cylinder knives. These are removable entirely from the face of the cylinder and not from the inside using a large socket-wrench and only one bolt to a knife. This is made possible by a new type of knife locking device. The stationary throat bars against which the cylinder knives cut are tool steel bars all four edges of which may be used before it becomes necessary to regrind.

The bearings of the machine are of the rigid collar oiling type and of such size that less than 20 pounds per square inch is carried.—Mitts & Merrill, Saginaw, Mich.



Robertson High Pressure Pump

## Lead Extrusion Pump

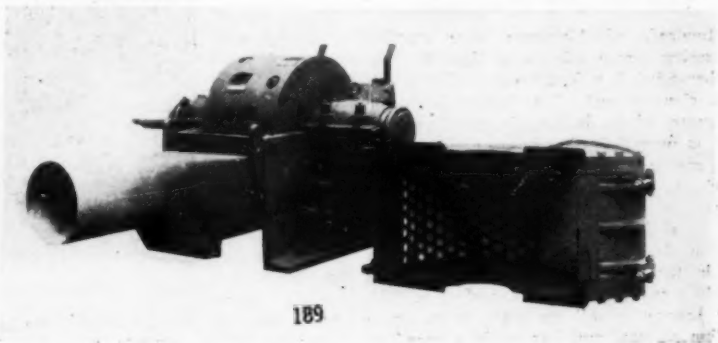
THE motor-driven pump pictured is designed for continuous severe service such as is met with in the operation of lead extrusion presses for encasing rubber hose for vulcanization and for sheathing electric cables of certain types.

The pump has a steel shaft with large diameter eccentric bearings which are bronze lined throughout. The main bearings are babbitt lined and all of the eccentric and main bearings are automatically lubricated from an oil reservoir holding 2½ gallons of oil. The knuckle joints are full bronze lined and work in oil. The plungers are of non-rust steel and operate in a forged steel pump chamber which is bronze bushed and fitted with removable bronze valve seats throughout. The packing chambers are deep and easily accessible. Each pump is equipped with a hydraulic safety relief valve having a sufficient capacity to relieve the full discharge of the pump without a substantial increase in pressure. This pump is built in sizes up to 50 gallons per minute and for working pressures up to 6,500 pounds per square inch.—John Robertson Co., 131 Water St., Brooklyn, N. Y.

## Single Phase Motors

AN improved single phase repulsion induction motor is herewith described. The sizes include ¾, 1, 1½ and 2 h.p at 1,800 r.p.m. It is of the constant speed high starting torque type for general application.

One of the most important improvements is the more efficient use of the stator punchings. This is accomplished by taking full advantage of the design possibilities of the polar winding of a repulsion motor. The most desirable distribution of stator coils in a repulsion motor is a sinusoidal distribution. This means, therefore, that the number of turns in the various coils of any one pole vary according to the angle from the pole center. Full advantage has been taken of this possibility by designing a four-pole motor using a square punching with graded slot depths, the slots being so arranged that the deep slots are placed at the corners where the maximum core is available and with the shallow slots placed in the flat portion of



M. & M. Rubber Scrap Hog with Cover Removed

the punching where the minimum core is available.

The motor is enclosed except for ventilating openings in the lower portion of each end shield. Air is drawn through the ventilating openings at the pulley end by means of an internal fan, passes around the stator laminations and out through the

G. E. Single Phase Motor

ventilating openings in the commutator end. This construction makes a practically enclosed motor and provides complete protection against falling particles and splashing water. In spite of this, and the small size of the motor, it is designed to operate within a temperature rise of 40 degrees C. This materially broadens the field of application, permitting the use of a standard 40-degree motor in many cases where only a larger, closed motor would otherwise be chosen. The ventilating openings in the end shields have been so designed that they will meet the requirements of the various safety bodies for protection against accidental contact. With only a slight change in the enclosing features, the motor may be made of a totally enclosed type, somewhat reducing the rating.—General Electric Co., Schenectady, N. Y.

## Automobile Brake Tester

THE brake tester illustrated is a piece of equipment available to the motor engineer and repairer by means of which brakes can be efficiently and accurately adjusted.

The wheel to be tested is jacked up and lowered on to the rollers, the car-weighing mechanism having first been brought into operation by raising a small elevating screw, thus transferring the weight of the car from the solid framework to the weighing mechanism and recording a figure on the dial which indicates the standard to which the brakes should ultimately conform.

Supposing the figure recorded on the dial to be 240, this means that, on testing the brakes, it should be possible to bring the indicator needle to 240 before locking the wheel—or very nearly to this figure. The method is to lower the elevating screw previously referred to so that the weighing

H.F. Standard Brake Tester

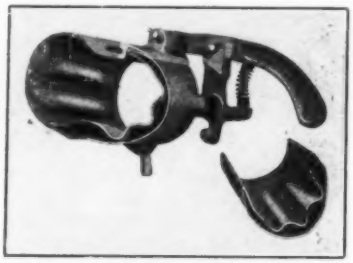
mechanism is put out of action. The tester is then operated by turning the handle with the brakes hard on until the indicator needle moves to the highest point it will reach. Should the brakes be in any degree ineffective the needle will fall short of the figure 240. Should the brakes be too fierce the wheel will lock before the indicator needle reaches that figure, and there will be a tendency for the wheel to be forced off the rollers.—Harvey Frost & Co., Ltd., 148 Gt Portland St., London, W. 1, England.

## Expansion Curing Mandrel

ONE of America's largest tire manufacturing plants scrapped 500 airbags daily in 1920 at an annual loss of $1,000,000. So impressive a loss stimulated study for its elimination, and the metallic expansion curing mandrel here illustrated was successfully developed for tube splicing. Soon it will be offered to manufacturers as an expansible tire core.

The principle employed in the device is that of a wavy or corrugated form of sheet metal capable of expanding to the internal contour of tube or tire under pressure. There is nothing destructible on the device therefore it is capable of unlimited service without replacement.

Experiments proved that of a number of more or less complicated designs the one



Huetter-Premier Tube Mandrel

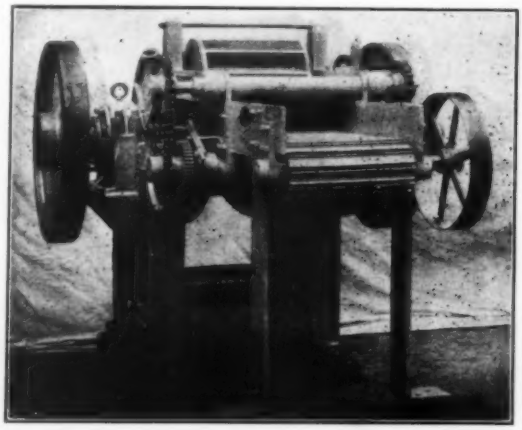
having corrugations was the simplest in construction and functioned perfectly as intended. The secret lies in the corrugations which cause expansion under pressure and contraction upon release of pressure.—Huetter-Premier Machine Co., Detroit, Mich.

## One Cylinder Hoopcycle

Hundreds of Akronites were startled by seeing a man ride down Main St. in a rubber tired five foot hoop, within which was slung a seat. The hoopcycle is the invention of an Italian, Joseph Ceccarini, and is propelled with a one cylinder, two h.p. engine, that drives by friction on the steel rim of the hoop. It is steered with a pair of regular motorcycle handlebars which shift the engine and seat frame within the hoop, from side to side, and guide the hoop. A tiny gasoline tank holds a pint and one-half, and, it is said, the hoopcycle will go sixty miles on a gallon of gas, and has made a speed of more than 79 miles an hour.

## Rubber Scrap Cutter

WHILE the working principle of the scrap rubber cutter here pictured has been in use extensively for years in rubber reclaiming plants a number of improvements have been embodied in the latest machine. Its frame is of cast steel with roller main bearings. The steel apron conveyer feed has heavy feed rollers swung from an overhead shaft.



Taylor-Stiles No. 12 Tire Chopper

In operation, debeaded whole pneumatic tires are usually brought up to the conveyer by a separate conveyer. The operator feeds them under the overhead breaking down roll in twisted form and the carrier delivers them to the knives.

The machine is one of extreme simplicity, economy of operation and practically unbreakable. The roller bearings require no attention other than to refill the oil reservoirs at intervals of two to three months. With the tires coming to the operator by conveyer, one man can cut from four to five tons per hour in condition for cracker or grinder. The machine is built for either direct motor connection or belt drive.—Taylor, Stiles & Co., Riegelsville, N. J.

# *Editor's Book Table*

## Book Reviews

**"Chemical Analysis of Gutta Percha, Balata and Allied Gums."** By S. Minatoya, K. Ishiguro and K. Maruyama. Researches of the Electrochemical Laboratory, Ministry of Communications, Osaki Machi, near Tokyo, Japan. Paper 14 pp. Japanese with English synopsis. Illustrated.

This is No. 232 of the researches of this laboratory. The English summary of its contents as given by the authors is as follows: "The result of chemical analysis is one of the important factors on the research of gutta percha, balata and allied gums as submarine cummunication cable insulation. As far as the authors know there has appeared very scanty memoir on such results since the reports (1899) of Dr. Eugen Obach who analysed several kinds of gutta percha and balata in markets, etc. The authors collected twenty-six kinds of gutta percha, eight kinds of balata and three varieties of allied gums in trade names and chemically analysed them for moisture, ash, dust, resin and gutta hydrocarbon. The resin which is the most important component for the electrical and mechanical properties, was subdivided into the so-called 'fluavile,' 'spherical albane' and 'needle albane.' Moreover the authors briefly discussed the results obtained and described some cautions about the method of the chemical analysis."

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**"Économie et Politique du Caoutchouc,"** by Henri Tard. Preface by M. R. D'Argila. Paris, Les Presses Modernes, 45, rue de Maubeuge, Ateliers à Troyes (Aube) 1928. Illustrated.

This general treatise, on crude rubber, is in two parts, the first of which covers its economic history, production from wild and plantation sources and its industrial importance as indicated by increasing rubber consumption. The second part is devoted to the history of the world's rubber market since 1910, the Stevenson restriction plan, its application and consequences now happily eliminated. The concluding chapter discusses the elements of the future market for rubber and the attitude of America toward a possible Anglo-Dutch understanding on plantation rubber production.

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**"Measurement of the Tread Movement of Pneumatic Tires and a Discussion of the Probable Relation to Tread Wear."** By W. L. Holt, physicist and C. M. Cook, junior scientist. Research Paper No. 2. Department of Commerce, Bureau of Standards, Washington, D. C. Paper, 28 pages, 6 by 9 inches. Illustrated.

This booklet is a reprint from Bureau of Standards Journal of Research, July, 1928. It gives the results of tire tread wear with different tires using the wax plate method of studying the influence of different factors on the tread movements and discussing the results.

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**"Chemical Engineering Catalog."** Thirteenth Edition, 1928. Published by The Chemical Catalog Co., Inc., New York, N. Y. Cloth, illustrated, 1,107 pages, 9 by 12 inches. Illustrated.

This well-known standard reference work is annually revised and is invaluable as a compendium of technical data for chemists chemical engineers and manufacturers. It contains an alphabetical index and trade name index covering the four sections of the volume which are as follows: Classified Index of Equipment and Supplies; Equipment and Supplies Section; Classified Index of Chemicals and Raw Materials Section; Technical and Scientific Book Section. Each successive annual edition registers improvement over the one preceding and the present edition is no exception. The catalog is distributed in the United States and Canada under two alternative plans—sent free of charge to holders of certain classified industrial positions; others pay a designated charge to cover mail and express.

**"Le Caoutchouc."** Economic and statistical study. By José Carlos de Macedo Soares. Preface by A. D. Luttringer. A. D. Cillard, editor, 49 rue des Vinaigriers, Paris, France. Paper, 160 pp., 5¾ x 9 inches.

This economic and statistical study of caoutchouc appeared last year in the Portuguese language and has now been translated into French and forms a part of the encyclopedia of caoutchouc and plastic materials under the able editorship of M. A. D. Cillard, editor also of *Le Caoutchouc et la Gutta Percha.*

The work reviews the subject of valorization of rubber and coffee in Brazil and recounts the evolution of the crude rubber industry and the influence of the automobile upon it. The history and operation of the Stevenson plan of restriction of plantation rubber production is reviewed in a special chapter. The attitude of the United States toward market control of imported crude products is considered. The final chapter is devoted to the "Economic Imperialism of the United States."

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**"Dispersoidological Investigations XVIII—XXI."** By Dr. P. P. von Weimarn and collaborators. Reports of the Imperial Industrial Research Institute, Department of Commerce and Industry, Osaka, Japan. Vol VIII, No.13, Nov., 1927. Paper, 80 pages 7½ by 10¼ inches. Illustrated with micro-photographs.

These investigations relate mostly to fibers except number XXI, which is on the caoutchouc state of matter, in connection with a microscopic investigation of silk-coagula in natural and polarized light.

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## New Publications

**"Tire and Auto-Accessory Topics"** is the title of a handy pocket size magazine of 100 pages published every month for rated tire dealers by Coverage Publishing Corp., 250 West 57 St., New York, N. Y. Volume 1, No. 1 of this magazine, the October issue, contains a large variety of crisp, interesting and timely articles discussing matters of special moment to the wide clientele of tire dealers throughout the country. The size, form and typography of the magazine is very suitable and convenient for the reader. The publication is distributed free of charge to rated tire dealers only and copies are not on sale.

**"American Society for Testing Materials Year Book, August, 1928."** Published at the headquarters of the A. S. T. M., 1315 Spruce St, Philadelphia, Pa. This book of 309 pages contains the charter, by-laws, list of officers, committees and members with much other official matter.

**"Farrel-Sykes Roller Bearing Type Speed Reducers."** This illustrated catalog of 24 pages covers Sykes speed reducers from 1 to 5,000 h. p. and contains much essential engineering data. Many applications of this reducer are shown.

**"The Most Efficient Drive in Industry."** This 56 page book issued by Electric Machinery Co., Minneapolis, Minn., clearly expounds the reasons why the synchronous motor holds its enviable position in the industrial world, explains its theory, development and applications. The book contains numerous charts, diagrams and illustrations of installations in various industrial plants including rubber.

**"The Johnson Friction Clutch Catalog."** Issued by The Carlyle Johnson Machine Co., Manchester, Conn. A 10 page illustrated loose leaf series of bulletins concerning the Johnson friction clutch and its application, particularly to small machines used in the rubber industry, machine shops and the machinery of factories in general.

**"Barbecue Machines Wind Electric Plants."** This is catalog No. 31, issued by Charles E. Miller, Anderson Rubber Works, Anderson, Ind. A very extensive line of Miller repair vulcanizers and accessory appliances is illustrated, described and priced.

**"Long Distance Transmitting and Recording System."** This is Catalog No. 1,900, issued by The Bristol Co., Waterbury, Conn. It illustrates and describes in detail the long distance electric transmitting systems and instruments as developed and manufactured for that purpose. A number of typical uses of this long distance system is given and a few chart ranges with specimen scales are illustrated.

**"The Story of Barytes"** is a word and picture history of the Missouri barytes ore deposits, and will be a valued addition to every rubber man's library. Copies may be obtained from C. P. DeLore Co., Mississippi River and River Des Peres, St. Louis, Mo.

**"Rubber Roadways,"** issued by Rubber Roadways, Ltd., 2, 3 and 4 Idol Lane, Eastcheap, London, E. C. 3, England, is an interesting booklet dealing with the various types of rubber roads. It is well illustrated and indexed.

**"On the Plantations of the United States Rubber Co."** is the title of a striking folder distributed by the U. S. company. This contains illustrations showing the buildings, plantings, tapping and natives, etc., and gives a vivid picture of life on a rubber plantation.

**The Faultless Rubber Co.,** Ashland, O., has issued Catalog No. 29-B, containing a large assortment of play balls, novelties and balloons.

**"How to Sell More Rubber Goods"** is a simple guide to greater volume in a profitable department. It has been prepared by the Davol Rubber Co., Providence, R. I., for the independent retail druggist.

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# New Goods and Specialties

## Shuglov Overshoe

The success of the Shuglov line of overshoes, manufactured by the Miller Rubber Co., Akron, O., last season will be duplicated this year, according to the manufacturer, because of the new features which have been added. Lines are smarter, color combinations keep pace with the trend

Shuglov

of today's mode, there are new and more colorful specials linings, constuction is strengthened and a new fastener makes unfastening easier and fastening more secure. Colors are gray, brown and nude with two types of heels. The universal is for military, military high and spiked heels. The cuban is for the lower and flatter heels. The model illustrated is of nude with dark brown trim and attractive cotton lining. A metal buckle of pleasing design ornaments the top and the new Talon hookless fastener enables one to put it on or take it off in a jiffy.

## Rubber Safety Yacht Blocks

Damage to painted surfaces on sailing vessels is said to be largely obviated, and personal injury rendered less likely, by the substitution in the rigging of firm, soft rubber cases for the ordinary wooden shells on pulley blocks. Manufactured by the West American Rubber Co., 400 North Avenue 19, Los Angeles, Calif.

## Safety Bathing Suit

Swimeezi

The Swimeezi bathing costume looks exactly like an ordinary bathing suit, but the portions covering the chest and back are constructed as rubber air chambers which may be inflated before the bather enters the water or when he is actually swimming. Movements are unrestricted but the mouth and nose cannot become submerged even if the bather becomes unconscious. The greater area of buoyancy given to the front of the garment is intended to cause the swimmer to roll on his back should he be in difficulties. The device is the invention of a physician and has been put on the market by "Swimeezi," Ltd., Roxburghe House, 273-287 Regent St., London W. 1, England.

## Mud Splashed Stockings

Acting on the principle that the cause of splashes on ladies' stockings in wet and dirty weather lies in the fact that mud and water is picked up and held by the heel of the shoe and is then thrown on to the stocking when the heel passes the leg in walking, Sorpex, Ltd., 1, Albert St., Birmingham, England, has produced the Sorpex Splash Savers to meet this condition. Sponge rubber and a special mixture

Sorpex Splash Saver

forms the tread which acts as an absorber and the water and mud is sucked up and retained in the pores of the sponge rubber while the heel is passing the leg, and squeezed out by the pressure of the foot when it again comes to the ground.

The Splash Saver is contained in a neat rubber case which will fit in the pocketbook ready for use in case of an unexpected shower. Three sizes for "Louis" heels are supplied and two colors, black and transparent; for "Cuban" heels a standard size is made also in black and transparent colors.

*For additional information regarding these articles write New Goods Dept.,* INDIA RUBBER WORLD, *420 Lexington Ave., New York, N. Y.*

## New Truck Tire

Leviathan Tire

The Leviathan Tire & Rubber Co., Grand Rapids, Mich., which has been building a complete line of high pressure and balloon passenger car tires for the last year, has announced the first of its new design truck tires.

This new tire conforms in general appearance to the regular Leviathan line, and is being made in sizes up to and including 32 by 6.

## Rubber Tired Tractors

Citrus fruit growers in Florida are equipping tractors with old tires without tubes or rims. The roots of oranges trees are usually to be found in the upper four or five inches of soil, and the ordinary steel blades of the tractor wheels caused considerable damage when passing over these roots. An added advantage which the rubber tired tractor has is that it enables the driver to cross improved roads without carrying boards to protect the road.

## Tennis Ball Packaging

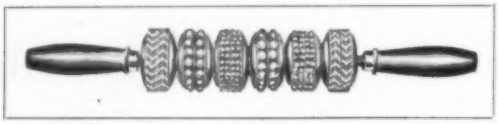
A. J. Reach, Wright & Ditson, Inc., announces a new method of individual air-tight packaging for tennis balls. It is known as the viscose cover, an individual compression that keeps each ball air tight until opened, when the ball springs to its normal size.

## Type of German Overshoe

*Overshoe manufactured by the Deutsche Gummischuh-Vertriebsgesellschaft G. M. B. H., Berlin, No. 43, Germany.*

## Flexible Reducer

The flexible spindle of the Kim reducer permits the massaging of all parts of the body. The individual disks covered with rubber of a special mixture produces a radio thermique effect which penetrates the tissues and removes superfluous flesh. It may be dissembled for cleaning and any part can be replaced. The reducer is used directly on the skin, and has been found to be helpful in cases of faulty elimination and constipation. Lewis Knight, 18, Dufferin St., Bunhill Row, London, E. C. 1, England, is the manufacturer.



Kim Reducer

## Scalp Massage Device

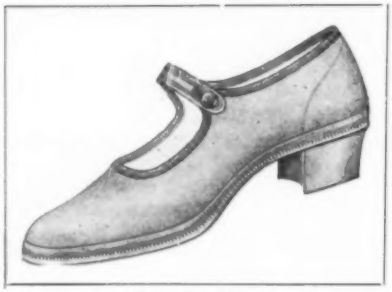
Blud-Rub is a new kind of scalp exerciser which gently but firmly grips the scalp and gives a deep and thorough manipulation. Driven by a small electric motor it rests comfortably on the head, four mechanical hands with soft flexible rubber pads doing the actual work. They grip the head at the hat band area, loosen and gently lift the scalp, stretch and knead it. Circulation is quickened, toxic poisons and waste matter carried away, fresh nourishmen is brought to the entire scalp, and the dry, shriveled hair cells begin to

Blud-Rub

take on new life. The manufacturer of this interesting device is the Blud-Rub Mfg. Co., 730 East Washington St., Indianapolis, Ind.

## Sport Shoe

A new shoe introduced by The North British Rubber Co., Ltd., 200-208 Tottenham Court Rd., London, W. 1, England, has been produced to provide a heeled shoe for holiday wear. It is smartly cut with high rubber heel and one bar, with patent fastening. The upper is of double texture canvas with neat rubber foxing to make it waterproof between the upper and the sole. The sole is fine knurled rubber. It is made for women only and can be supplied in white, pale green, blue, red and sunburn shades.



Biarritz Shoe

## Sponge Bag

An adaptation of the well-known corrugated tobacco pouch has been effectively applied in the making of a sponge bag by William Warne & Co., Ltd., 29 Gresham St., London, E. C. 2, England. When the wet sponge is enclosed in the inner flap and the outer

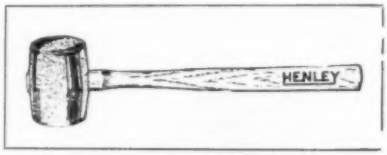
W. W. Sponge Pouch

cover folded over it is impossible for any moisture to escape and play havoc with the other contents of the suit case. Hot climates will not affect the rubber.

Wonder Balloons

## Rubber Mallet

The main feature of these mallets is that they do not damage any surface work with which they are brought in contact, such as paint work, etc., which makes them invaluable for use in printing, garage repairs, brewing, electrical and engineering trades. They are made in three sizes, each size in two degrees of hardness according to the work which it is required to perform. The manufacturer claims that they have been thoroughly




Henley's Mallet

tested in various trades, the success of these tests resulting in their taking the place of wooden and raw hide mallets. Henley's Tyre & Rubber Co., Ltd., 20-22 Christopher St., Finsbury Square, London, E. C. 2, England, manufacture the mallet.

## Colored Rabbit

Realistic little colored rabbits are the newest items marketed by the "Vulkan" Weiss & Baessler A.-G., Leipzig W. 33, Germany. These tiny animals are manufactured without a seam and are very durable. The coloring is artistically applied and the rabbit will squawk when squeezed. A choice of white or yellow with red and brown trims is now offered but the manufacturer expects to shortly add to these colors others in gray and brown.

Rabbit

## Mammoth Balloons

The Faultless Rubber Co., Ashland, O., has this season placed on the market a line of toy balloons, made by a new process, which it claims is superior in every way to the acid cured balloons previously manufactured. This new line is made from pure gum stock, vulcanized with heat under water. The stock has a tensile strength of more than double the acid cured stock, giving a tough, flexible balloon which the company guarantees not to deteriorate in stock in any climate for one year from the date of shipment from the factory. The balloons inflate more easily and larger than the same size acid cured ones and when deflated, return to the original size. The line is made in four colors: red, blue, green and yellow. They are nearly transparent and stay inflated for a longer period than the ordinary balloon.

# *Financial and Corporate News*

## Boston Woven Hose & Rubber Co.

The past year has, due to the decline in price of crude rubber, been a trying time for the rubber industry in general and it is therefore with considerable gratification that I report to the stockholders of this company that we have completed our fiscal year with better than an average showing over our past good results.

Value of shipments for the year declined from $9,939,425.64 in 1927 to $9,441,994.28 for the year just closed, while volume poundage shipped out reduced from 44,906,261 pounds to 43,229,580 pounds. The decline in gross business is partly due to price reductions during the year, but the actual reduction in volume as shown by the decrease in poundage shipped is more directly traceable to our policy of development than to an actual loss in desirable business. Some years ago it was decided, after a careful survey, to concentrate our sales efforts on certain lines of a more profitable nature, gradually eliminating others, desirable neither from the standpoint of volume nor profit. This policy of substitution has obscured the real growth that has gone on in the desirable part of our business during the past few years, but the operation has now been largely accomplished and the growth in the company's volume should soon become more apparent. Following our usual custom, merchandise inventory has been conservatively taken, raw materials being priced at cost or market, whichever is lower.

We have earned our common and preferred dividends by a safe margin, after having taken full depreciation on our plant and machinery, and providing for all taxes payable out of these earnings. From the balance of profit your directors have declared an extra common dividend of $1.00 per share, payable December 15th, 1928, to stockholders of record December 1st, 1928. Following this action a surplus of $2,187,164.37 remains in the business as compared with $2,112,096.23 a year ago.

Our cash position is strong, funds on hand in the form of cash and demand loans being substantially greater this year than last. The company has no loans outstanding and has as liabilities only the current accounts payable and dividend not yet due. Our condition is excellent and we look forward with confidence to the future.

GEORGE E. HALL, President.

The above report to the stockholders was the last official act of our late president, George E. Hall, who passed away suddenly and unexpectedly on the morning of October 3rd, 1928.

This report we fully approve, adding thereto our confident belief that the policies so long pursued by Mr. Hall will be successfully continued by the efficient organization which he has built up.

BOARD OF DIRECTORS,
By J. NEWTON SMITH, Vice President.

Cambridge, Mass., October 15, 1928.

**BALANCE SHEET**

| ASSETS | September 1, 1928 | | September 1, 1927 | |
|---|---|---|---|---|
| Cash | $352,579.71 | | $342,562.18 | |
| Demand collateral loan | 900,000.00 | $1,252,579.71 | 750,000.00 | $1,092,562.18 |
| Accounts receivable | $1,114,099.45 | | $1,043,707.32 | |
| Less reserve | 42,725.50 | 1,071,373.95 | 35,431.39 | 1,008,275.93 |
| Notes receivable | $91,577.98 | | $123,269.15 | |
| Less reserve | 37,500.00 | 54,077.98 | 25,000.00 | 98,269.15 |
| Common Stock—B. W. H. & R. Co. | | 119,680.26 | | 46,537.26 |
| Merchandise inventory | | 1,664,638.71 | | 1,849,323.25 |
| Total current assets | | $4,162,350.61 | | $4,095,057.77 |
| Prepaid items | | 82,637.71 | | 78,246.03 |
| Patents | $1.00 | | $1.00 | |
| Land | 247,146.26 | | 247,146.26 | |
| Buildings | 2,188,130.27 | | 2,188,130.27 | |
| Machinery | 2,850,452.31 | | 2,901,219.49 | |
| Office furniture and other equipment | 43,812.44 | | 42,498.15 | |
| | $5,329,542.28 | | $5,378,995.17 | |
| Less depreciation | 1,683,116.96 | 3,646,425.32 | 1,652,541.21 | 3,726,453.96 |
| | | $7,891,413.64 | | $7,899,757.76 |

| LIABILITIES | | |
|---|---|---|
| Accounts payable and wages | $233,178.96 | $184,761.53 |
| Dividend declared payable Sept. 15th | 129,000.00 | 129,000.00 |
| Total current liabilities | $362,178.96 | $313,761.53 |
| Taxes—payable during year 1929 | 198,720.31 | 244,250.00 |
| Reserved for extra dividend and Bonus | 93,350.00 | 179,650.00 |
| Capital stock—preferred (6% cumulative) | 750,000.00 | 750,000.00 |
| Capital stock—common (86,000 shares no par value) | 4,300,000.00 | 4,300,000.00 |
| Surplus | 2,187,164.37 | 2,112,096.23 |
| | $7,891,413.64 | $7,899,757.76 |

**STATEMENT OF EARNINGS**

| | 1928 | 1927 |
|---|---|---|
| Gross sales | $9,441,994.28 | $9,939,425.64 |
| Cost of sales | 8,749,173.45 | 9,019,194.80 |
| Operating profit | $692,820.83 | $920,230.84 |
| Other income | 56,391.42 | 53,270.26 |
| Profit for year | $749,212.25 | $973,501.10 |

**SURPLUS ACCOUNT**

| | 1928 | | 1927 | |
|---|---|---|---|---|
| Surplus previous year | $2,112,096.23 | | $1,924,676.52 | |
| Profit for year | 749,212.25 | | 973,501.10 | |
| | $2,861,308.48 | | $2,898,177.62 | |
| Increase reserve for accounts receivable and notes | 19,794.11 | | 45,431.39 | |
| | $2,841,514.37 | | $2,852,746.23 | |
| Dividends paid preferred | $45,000.00 | | $45,000.00 | |
| Common | 516,000.00 | 561,000.00 | 516,000.00 | 561,000.00 |
| | $2,280,514.37 | | $2,291,746.23 | |
| Reserved for extra dividend and bonus to employes | 93,350.00 | | *179,650.00 | |
| | $2,187,164.37 | | $2,112,096.23 | |

J. NEWTON SMITH,
Treasurer.

*Paid Nov. 15, 1927.

## National Rubber Machinery Co.

The National Rubber Machinery Co., Akron, O., reports net income for the three months ended September 30, available for dividends, after depreciation, interest and taxes, of $146,000, as against $108,480 for the second quarter and $104,872 for the first quarter of 1928. This is an increase of 34 per cent over the second quarter ended June 30.

The earnings for the third quarter are at the annual rate of $5.92 per share on the 98,000 shares of stock outstanding after conversion of $400,000 face value of bonds out of $1,350,000 originally issued as of July 1, 1928. Total net income for the nine months ended September 30, 1928, available for dividends, amounted to $363,352, compared with $304,006 for the full year 1927.

## The B. F. Goodrich Co.

The directors of The B. F. Goodrich Co. after their regular quarterly meeting Oct. 24, issued the following statement:

During the quarter ended Sept. 30. 1928, the volume of sales was greater than during any corresponding period in the history of the company. However, because of price reductions the dollar sales and profits were slightly below those of the corresponding period of last year.

The regular dividend of $1.75 per share was declared on the preferred stock payable Jan. 2, 1929, to stockholders of record at the close of business Dec. 10, 1928. A dividend of $1 per share was declared on the common stock without par value payable Dec. 1, 1928, to stockholders of record at the close of business Nov. 9, 1928.

## Goodyear Financing

The Goodyear Tire & Rubber Co. will finance a $10,000,000 expansion program. President P. W. Litchfield said the plans include a plant in the South.

"The company's business is in a flourishing condition," Mr. Litchfield said in a statement to the stockholders. "Despite the heavy losses in the first half of the year incident to the sudden discontinuance of British restriction of crude rubber production,

indications are the company will be able to report a satisfactory net profit for the year.

"Your directors therefore feel that some plant expansion is essential in order that we may keep pace with our growing business and the increasing demand all over the world for Goodyear products. In addition to moderate extension of existing plant facilities, both in the United States and abroad, it has been decided to establish a tire manufacturing unit in the South to take advantage of favorable production costs and distribution economies."

## Dividends Declared

| Company | Stock | Rate | Payable | Stock of Record |
|---|---|---|---|---|
| Electric H. & R. | Pfd. | 1½ % q. | Oct. 15 | Oct. 8 |
| Electric H. & R. | Pfd. | 1½ % ex. | Oct. 15 | Oct. 8 |
| Firestone | Com. | $2.00 q. | Oct. 20 | Oct. 10 |
| Fisk | 1st pfd. omitted | $1.75 q. | Due | Nov. 1 |
| Fisk | 1st cv. pfd. omitted | $1.75 q. | Due | Nov. 1 |
| Fisk | 2nd pfd. omitted | $1.75 q. | Due | Nov. 1 |
| General | Pfd. | $0.75 ex. | Nov. 1 | Oct. 20 |
| Goodrich | Pfd. | $1.75 q. | Jan. 2 | Dec. 10 |
| Goodrich | Com. | $1.00 q. | Dec. 1 | Nov. 9 |
| Manhattan | Pfd. | $0.62½ q. | Oct. 31 | Oct. 15 |
| Manhattan | Pfd. | $0.50 ex. | Oct. 31 | Oct. 15 |
| Manufactured Rubber | Pfd. | $0.15 q. | Oct. 15 | Oct. 8 |
| Manufactured Rubber | Pfd. | $0.15 ex. | Oct. 15 | Oct. 8 |
| Overman Cushion | A com. omitted | $0.37½ q. | Due | Oct. 1 |
| Overman Cushion | B com. omitted | $0.37½ q. | Due | Oct. 1 |
| Rubber Service | Pfd. | $0.60 q. | Oct. 20 | Oct. 10 |
| Stedman Products | Pfd. | $1.75 q. | Oct. 1 | Sept. 25 |

## New York Stock Exchange Quotations

October 22, 1928

| Company | High | Low | Last |
|---|---|---|---|
| Ajax | 9 | 8¾ | 8¾ |
| Fisk | 11¾ | 11½ | 11¾ |
| Fisk, 1st pfd. | 59 | 59 | 59 |
| Goodrich (4) | 85⅜ | 83½ | 84 |
| Goodrich, pfd. (7) | 111½ | 111½ | 111½ |
| Goodyear | 92 | 84¼ | 89 |
| Goodyear, 1st pfd. (7) | 101¾ | 99⅞ | 101¾ |
| Intercontinental | 9½ | 9⅛ | 9⅛ |
| Kelly-Springfield | 21⅝ | 21 | 21 |
| Kelly-Springfield, 6% pfd. | 83 | 83 | 83 |
| Lee | 22¾ | 21 | 22¾ |
| Miller | 22¼ | 22 | 22 |
| Norwalk | 6½ | 6½ | 6½ |
| U. S. Rubber | 41 | 40½ | 41 |
| U. S. Rubber, 1st pfd. | 70 | 69 | 69 |

## Akron Rubber Stock Quotations

October 20, 1928

| Company | Bid | Asked |
|---|---|---|
| Akron R. R. | 17½ | 22 |
| Akron R. R., pfd. | .. | 98 |
| Falls | 5 | 8¾ |
| Faultless | 31½ | 33 |
| Firestone | 172 | 174 |
| Firestone, 6% pfd. | 108 | 110½ |
| Firestone, 7% pfd. | 107 | 108½ |
| General | 204½ | 210 |
| General, 6% pfd. | 98 | 100 |
| Goodrich | 82 | 83 |
| Goodrich, pfd. | 110 | 111 |
| Goodrich, 6½s | 107 | 108 |
| Goodyear | 82½ | 84 |
| Goodyear, 1st pfd. | 99½ | 100¾ |
| Goodyear, 5s '28 | 99¾ | 100 |
| Goodyear, 5½s, '31 | 108½ | 109 |
| Goodyear, 5s '57 | 92¾ | 93 |
| India, com. | 40 | 42 |
| India, 7% pfd. | 95 | 97 |
| Mason | .. | 1 |
| Mason, pfd. | .. | 7 |
| Miller | 22 | 23¼ |
| Miller, 8% pfd. | 80 | 81 |
| Mohawk | 205 | 215 |
| Mohawk, 7% pfd. | .. | 93 |
| Rubber Service | .. | 40 |
| Seiberling | 48 | 49 |
| Seiberling, 8% pfd. | 105 | 106½ |
| Star | .. | 1 |
| Star, 8% pfd. | .. | 8 |

## Rubber Tiling Prospects Good

According to Dr. Philip Schidrowitz, with rubber at a reasonable and stable level of price a great extension of the use of interior rubber flooring is to be anticipated, and insofar as competition with the better grades of linoleum is concerned it is a practicable proposition. At present prices it is quite feasible to sell rubber floorings of various grades and of qualities competitive with better linoleums and cork carpets at moderate prices per square yard. Commenting on durability, he notes not only the remarkable wear shown by latter-day products but also the old interlocking type of rubber tiling which has lasted for 30 years without replacement, and even the wear is believed to have been due as much to scrubbing as to foot friction.

# New Incorporations

Auburn Rubber Corp., Oct. 4 (Delaware), capital stock is $500,000 preferred, par value $100, and 30,000 shares common stock without nominal or par value. A. L. Miller, A. V. Lane, and C. S. Peabbles, all of Wilmington, Del. To manufacture rubber tires and tubes.

Eagle Rubber Co., Inc., Sept. 24 (Delaware), capital stock is $200,000, par value $100. J. V. Pimm, A. G. Bauer, both of Philadelphia, Pa., and R. L. Spurgeon, Wilmington, Del. To deal in all kinds of crude, refined and manufactured rubber, gutta percha, chicle and other gums and like substances.

Henderson Rubber Reports, Inc., Oct. 24 (New York), capital stock 100 shares no par value. F. R. Henderson, 2 Gramercy Park, A. S. Broms, 434 West 120th St., both of New York, N. Y., and G. E. Perry, 33 Salter Place, Maplewood, N. J. Principal office, Manhattan. To give information relating to rubber, tires, etc.

Jersey Rubber Co., Sept. 28 (New Jersey), capital stock is $5,000, divided into 50 shares of the par value of $100 each. M. Lorenz, 824 Dawson St., S. Rottman, 982 E. 165 St., both of New York, N. Y., and H. Kasavan, 463 Teaneck Road, Ridgefield Park, N. J. Principal office, 463 Teaneck Road, Ridgefield Park, N. J. To manufacture rubber products of all descriptions.

Louisville Tire Service, Inc., Oct. 1 (Delaware), capital stock, $10,000, par value $100. A. L. Miller, A. V. Lane, and C. S. Peabbles, all of Wilmington, Del. To manufacture and deal in rubber, gums and all substitutes therefor.

Par Tire Works, Inc., Oct. 4 (New York), capital stock 200 shares no par value. S. Israel, 1610 Boston Road, M. Adler, 1072 Bryant Ave., and B. Ellner, 150 Broadway, all of New York, N. Y. Principal office, Manhattan. To manufacture tires.

Pollack Bros. Scrap Rubber Corp., Oct. 2 (New York), $25,000. M. Pollack, 253 Herzl St., A. and R. Pollack, both of 874 Saratoga Ave., all of Brooklyn, N. Y. Principal office, Kings County, N. Y. To deal in all kinds of new and scrap rubber.

Rubber Products Corp., Oct. 10 (New Jersey), capital stock of $100,000 preferred stock of the par value of $10.00 each, and 5,000 shares of common stock without par value. E. S. Price, 46 Warren St., H. D. Smith, 810 Broad St., both of Newark, N. J., and W. Ehrenfeld, 12 Broad St., Flemington, N. J. Principal office, 810 Broad St., Newark, N. J. To manufacture rubber goods.

## National Association of Waste Material Dealers

The regular fall meetings of the National Association of Waste Material Dealers were held Oct. 16 and 17 at Hotel Astor, New York, N. Y. Henry Lissberger, president of the association presided at the general meeting. Secretary Charles M. Haskins reported a continuous growth in the organization which now numbers 500 members representing 17 countries.

The Scrap Rubber Division held its meeting on Oct. 16, when specifications of packing were discussed, particularly relative to differences between dealers and reclaimers on roadworn tires. It was voted that the matter be taken up again with the Reclaimers Division of the Rubber Association. David Feinburg, of the David Feinburg Co., Boston, chairman of the division, empowered a committee consisting of Julius Muehlstein, of H. Muehlstein & Co., Inc., New York, Jesse Long, of the New York office of S. Birkenstein & Sons, Inc., and Nat E. Berzen, of Nat E. Berzen, Inc., New York, to take up the matter.

## Synthetic Rubber Possibility

The problem of producing commercial synthetic rubber has not lost interest for the scientists although the price of the natural product has for months been stabilized at 18 to 20 cents a pound and is not expected to rise above that level following removal of British restrictions on exports after November 1.

The line of research made available by high powered cathode-ray tubes has recently been reinforced by an improved tube of German invention by which many types of materials can be transformed into other types of stable compounds.

It is reported that the new high velocity cathode-ray will convert the waste of petroleum stills and coke ovens into rubber with great rapidity.

# *The Rubber Industry in America*

## Ohio Safety Congress

The Second All Ohio Safety Congress, under the auspices of the Industrial Commission of Ohio and the management of the Division of Safety and Hygiene, is to be held at the Neil House, Columbus, O., Nov. 13, 14, 15.

A special session for the rubber industries of Ohio has been arranged for the morning of Nov. 14, when Safety Kink slides, which show various mechanical guards in use in the industry, and also safety stunts which have been used in the various plants, will be displayed.

PROGRAM

1. Safety. "Conservation of Man Power, Our Most Valuable Asset." R. R. Gross, factory manager, The Firestone Tire & Rubber Co., Akron, O.
2. Safety Problems (a) "Fire Hazards and Means of Prevention in the Rubber Industry." T. G. McKenna, manager, Division of Safety & Fire Prevention, The Goodyear Tire & Rubber Co., Akron, O; (b) "Adapting the Safety Program to the Small Rubber Plant." P. M. Wooden, The Mansfield Tire & Rubber Co., Mansfield, O; (c) Safety Kink Slides of Rubber Section, National Safety Council.
3. General round table discussion of safety problems.

The above interesting program will surely bring out a large attendance and a record meeting is confidently expected by the officers of the Rubber Section.

## Work Started on Goodrich Addition

The new building of The B. F. Goodrich Co., Akron, O., for which ground has already been broken, will be of steel and concrete construction with brick facing, 260 feet long and 148 feet wide. Its area of 316,000 square feet floor space will bring the total floor space of Goodrich factories in Akron to nearly three quarters of a billion square feet. Officials declare that the new building will be the fourth largest in Ohio and it will be known as the Finished Goods Building to warehouse all products, except footwear. Its cost will be in the neighborhood of $1,000,000.

Underground tunnels will connect the structure with all the 65 buildings of the huge plant. Eight of the nine floors will be used for storage, the top floor to have a modernly equipped dispensary. A special hospital elevator, with a capacity of 4,000 pounds, will have a speed of 450 feet per minute.

Special features which make for more efficient and economical service are: track arrangements for loading ten freight cars at one time; storage for sixteen large trucks; four large elevators each of five-ton capacity, of latest electric motive power with high speed gates opening and closing in three seconds; and a total of 4,500,000 cubic feet of storage space.

## *Ohio*

**J. G. Chalfant,** president and general manager of the Summit Mold & Machine Co., Akron, O., has returned from his annual Pacific Coast trip. The company manufactures molds, cores and engineering specialties for the rubber trade.

**Dr. William F. Zimmerli** has joined the technical staff of the Roessler & Hasslacher Chemical Co. and will be

Dr. William F. Zimmerli

connected with the service department of its rubber division in Ohio and the midwest.

**William Cooper & Nephews,** 134 E. Miller Ave., Akron, O., have been made Ohio distributers for the new Amsco rubber solvent manufactured by the American Mineral Spirits Co., Chicago, Ill.

**The Faultless Rubber Co.,** Ashland, O., at a recent meeting reelected C. D. Hubler to the presidency. E. E. Miller was added to the executive committee.

**The Seiberling Rubber Co.,** Akron, O., it is said, is planning an expansion and improvement program to cost in the neighborhood of $500,000.

**Dr. E. A. Hauser** gave an address to the Akron section of the American Chemical Society at a recent meeting.

**The India Tire & Rubber Co.** held a four day conference, Oct. 3 to 6, at the home office in Akron for officials and branch managers.

**Mrs. Harvey S. Firestone, Sr.,** and **Mr. and Mrs. Harvey S. Firestone, Jr.,** left recently to attend the opening of the Paris automobile show.

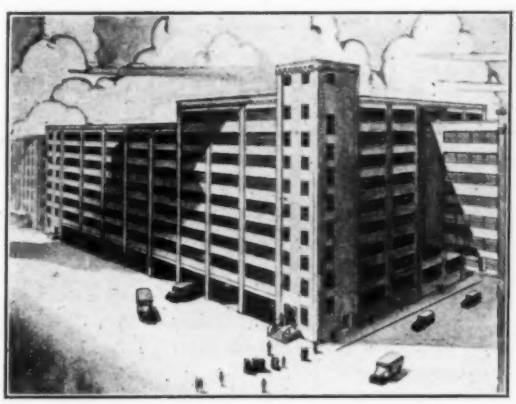
**P. E. Hanaver,** assistant branch manager at Boston for the Goodyear Tire & Rubber Co., has been transferred to Akron where he is manager of the dealer development department.

**Miss Helen Caswell,** billing clerk for the Sun Rubber Co., Barberton, O., will be married soon to Walter Flath of The Ohio Insulator Co.

**W. G. Brown & Co.,** Union Central Tower, Cincinnati, O., has been made sales agent for dry colors for The Ault & Wiborg Co. Mr. Brown has, for the past ten years, been consultant to Ault & Wiborg on the production of colors for the rubber and kindred industries.

**The Goodyear Zeppelin Co.,** Akron, O., subsidiary of the Goodyear Tire & Rubber Co., has been awarded the contract for the construction of two new mammoth Navy dirigibles at a price of $7,950,000 each, including a hangar.

**The Goodyear Tire & Rubber Co.'s** heads scattered throughout the world opened an inter-plant conference at the main Akron plant on Oct. 8. Every phase of the company's manufacturing of its products was discussed and ideas and methods of solving problems exchanged. The plan of the inter-plant conferences was inaugurated by President P. W. Litchfield in 1920 as a means of coordinating the entire organization into a united unit.



**Architect's Drawing of the New Addition to The B. F. Goodrich Co.'s Plant, Akron, O., showing building as it will look when completed.**

# Goodyear's Annual Sales Conference

OVER 1,000 salesmen of the Goodyear Tire & Rubber Co. gathered in Akron, O., the week of Oct. 15, for the 30th anniversary homecoming and sales conference. They arrived on nine special trains from every point of the compass, from every state of the Union and from Canada.

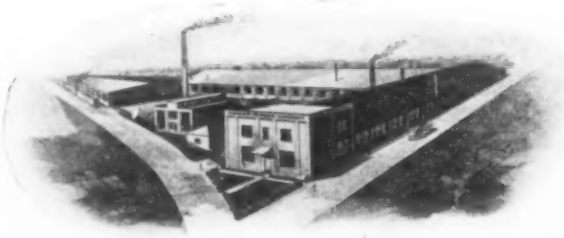
A parade, led by President P. W. Litchfield and officers of the company, started off the gala event. Over 1,600 participated, all arrayed in bizarre and grotesque costumes, while thousands lined the streets on all sides. Perhaps the greatest ovation given was received by the St. Louis group, who, in aviator costumes, carried with them a replica of the Spirit of St. Louis. The march ended at Seiberling Field, passing a reviewing stand on which were grouped a large number of executives all arrayed in caps and aprons. The Goodyear blimp Puritan circled about the field, flying low over the heads of the crowd.

**Snap Shots of the Goodyear Salesmen's Homecoming Parade**

The welcoming address at the opening of the conference was made by Judge G. A. Waddle, assistant sales manager, followed by a talk by H. E. Blythe, assistant to the president. The conference was continued for four days and plans were made to make the year 1929 a record one for the Goodyear company.

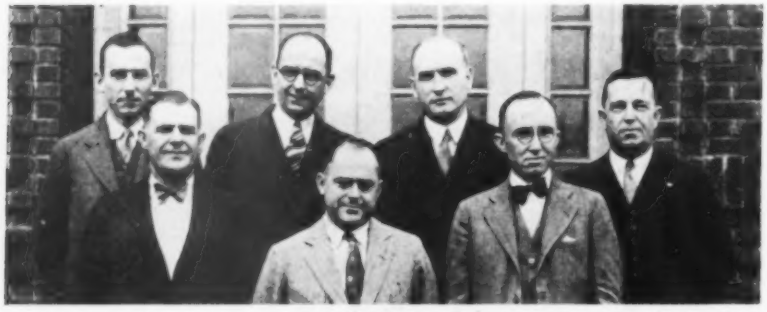
## The Hankins Rubber Co.

EIGHTEEN years' experience in the manufacture of surgeons' rubber gloves has made the product of the Hankins Rubber Co., Massillon, O., recognized as one of sterling merit. The dip room of the company is in operation twenty-four hours a day, and new equipment and the latest facilities, together with an appreciative understanding of the surgeons' demands, help produce an article which is up-to-date, economical, and serviceable. In addition to gloves, drainage tubing and one and two finger examination cots are manufactured.



**Plant of The Hankins Rubber Co., Massillon, O.**

The officers of the company are S. Bert Hankins, president; William Ries, vice president; and Mrs. L. E. Hankins, secretary-treasurer.



**M. L. Bell, Head of The Columbia Tire Co., Exclusive General Tire Dealer of Miami, Fla., Photographed at Akron with General Tire Officials. Top Row: T. F. O'Neil, Frank Matzke, W. O'Neil, H. D. Taylor, all of the General Tire & Rubber Co. Front Row: J. S. Talley, M. L. Bell, C. V. Jones.**

**Firestone employes** are organizing a new orchestra to be headed by Charles R. Campbell of Dept. No. 23, Firestone Tire & Rubber Co. Mr. Campbell is a capable musician and has had six years' experience leading orchestras in Akron.

**William Stevens,** superintendent of the Goodyear Tire & Rubber Co., returned to Akron after touring the continent for the past five months, the Puritan baby blimp meeting him at Quarantine. Mr. Stevens visited Sumatra, Sydney, Australia and Wolverhampton, England.

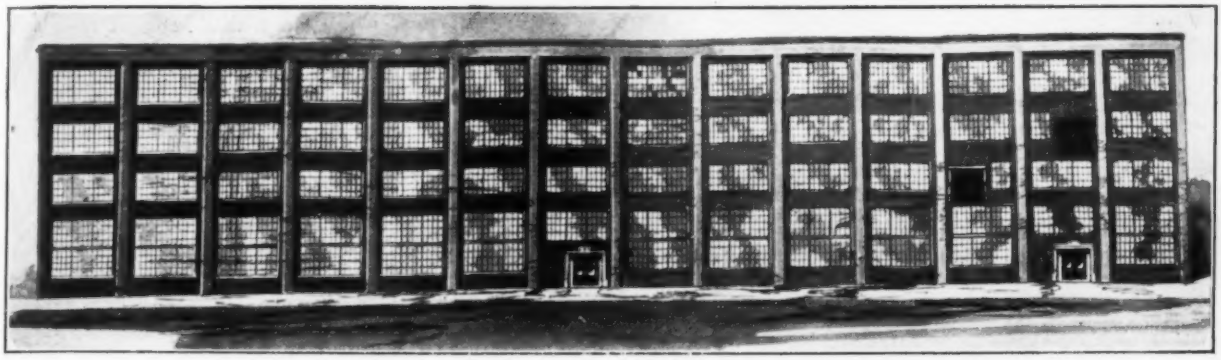
**Harvey S. Firestone, Sr.,** president of the Firestone Tire & Rubber Co., Akron, O., was a guest of honor at a dinner to pioneers of American industries held in New York City, Oct. 24.

## Rubber Company Fellowships

Sheldon C. Nicol is holding the Goodyear and J. E. Whittenberg, the Firestone fellowships for the study of rubber chemistry at Akron University. Both men are graduates of the University of Illinois and won the appointments in competition with sixty-one other recent university graduates. They are doing special research work under Prof. H. E. Simmons and are in charge of several of the regular chemistry classes at the university.

## Seiberling Conference

About 250 men of the sales organization of the Seiberling Rubber Co., Akron, O., from all parts of the United States and Canada, met at the company's main plant at Barberton, Oct. 4, for their annual sales conference. A dinner was held at the Hotel Portage and the men were also entertained at the home of Frank A. Seiberling, president of the company.



One of Six Factory Buildings to Be Erected by The General Tire & Rubber Co. in Akron, O.

## The General T. & R. Co.'s Million Dollar Expansion

Immediate construction of two large factory buildings and five separate departmental buildings, costing upwards of $1,000,000, was announced last month by W. O'Neil, president of The General Tire & Rubber Co. as part of the largest factory expansion program in the fourteen years of General's operations in Akron. Contracts have been let and work on the new buildings will start immediately so that the plants will be finished and operating shortly after Jan. 1, 1929.

In making this announcemnt, Mr. O'Neil contradicts rumors current in the rubber industry and in Los Angeles that some of the company's new buildings would go to the West Coast. That the organization plans to concentrate all it future manufacturing activities in Akron was indicated by officials.

"Our present outlook," continued Mr. O'Neil, "perhaps justifies a doubling rather than a 50 per cent increase in our plant. The building activities of this company, however, have always been governed by our capacity to build new factories out of earnings rather than with the aid of additional capital. In line with this policy, our new construction program will be financed by the company from its own building fund."

New buildings to be erected include: one four-story plant, 280 feet long, together with a smaller three-story wing, an additional story to one of the present factory buildings, a new printing plant, chemical warehouse, rim warehouse, and an oil storage plant. The new factory additions will be used mainly for building tires.

## R & H Service Awards

The Roessler & Hasslacher Chemical Co., on Wednesday evening, Oct. 24, in recognition of faithful service gave gold watches to the 15 employes who had been with the company for over 25 years. The occasion was the annual banquet of the Parah Club, a social club organized by the members of the company, held at the Masonic Temple, Perth Amboy, N. J.

# *New Jersey*

The New Jersey rubber industry shows improvement over last month and orders have greatly increased for certain lines of mechanical rubber goods. The demand for hose, belting and packing took a big jump and some of the factories are working overtime on orders. Tire and tube manufacturers announce there has been an increase in production during the past few weeks. Some of the hard rubber manufacturers report that business is increasing, while others state that it remains about the same. The heel and sole industry continues good.

**The Rubber Manufacturers' Association of New Jersey** held its first fall meeting and dinner on Oct. 8 at the Trenton Club, Trenton, N. J. The rubber situation was discussed in general following the dinner.

**The Joseph Stokes Rubber Co.**, Trenton, N. J., which recently completed a factory building to take care of additional work, has let a contract for a machinery storage building to cost $2,500. The company is very busy on hard rubber storage battery cases.

**J. Edward Meyers**, superintendent of the Acme Rubber Co., Trenton, N. J., has been appointed chairman of the committee to secure 1,800 new members for the Trenton Y. M. C. A.

**The Thermoid Rubber Co.**, Trenton, N. J., reports that business remains normal in all its departments.

**The Essex Rubber Co.**, Trenton, N. J., announces a good volume of orders and prospects bright for the coming year.

**Whitehead Bros. Rubber Co.**, Trenton, N. J., has started a night shift to keep up production in the belting, hose and packing departments. The company has many orders to fill before winter.

**Thomas Morrison, Jr.**, of Pittsburgh, Pa., vice president of the Murray Rubber Co., Trenton, N. J., and Miss Sara Mary Barnes, of "Four Winds," Haverford, Pa., were married on Oct. 7 in Philadelphia. C. Edward Murray, Jr., President of the Murray Rubber Co., was one of the ushers.

**The Puritan Rubber Co.**, Trenton, N. J., announces that the plant is running night and day in order to keep up with orders. The company is particularly busy in the manufacture of Amtico marbleized rubber tile, stair treads, molded and perforated mats. Miah Marcus, treasurer of the company, has returned from abroad. He visited the Puritan branch in London and also went to France, Germany and Italy.

**The Luzerne Rubber Co.**, Trenton, N. J., announces that the hard rubber business shows some improvement after a slow season.

**C. Edward Murray, Jr.**, president of the Murray Rubber Co., Trenton, N. J., is on an extended business trip through the south and west. Albert F. Dornsief, general sales manager, spent a week traveling through the south where his concern has a good jobbing business.

**The Lambertville Rubber Co.'s** plant at Lambertville, N. J., has been sold to L. Rosenburg & Son, Inc., of Boston, Mass. Judge Bentley in the Jersey City Court of Chancery has approved the sale, which includes all finished stock on hand, the mill property in Lambertville and all the land now held by the company. The Rosenburg firm is a large New England jobber in footwear. William Crowley, one of the receivers states that the plant will be put in operation.

**The Meixsell Mfg. Co.** has changed its name to the Voorhees Rubber Co. and has its main office at 480 Henderson St., Jersey City, N. J. Charles W. Symanski is president.

**The Hendry Bros. Patch Co., Inc.**, 37 Exchange Place, Passaic, N. J., has applied to Washington for a patent on a blowout patch producing machine which cuts down, it is said, eighty-five per cent of the actual labor required to turn out automobile patches.

**The Pierce-Roberts Rubber Co.**, Trenton, N. J., is planning another addition to its plant, which will be the second of its kind this year. The building will be 50 by 60 feet, one story high and of brick. The concern is running [illegible] shifts in the press room.

# New England

**Walter W. Evans,** recently resigned from the scientific staff of the R. T. Vanderbilt Co., 50 East Forty-second St., New York, and entered the employ of the Ludlow Mfg. Co., Boston, Mass., manufacturer of jute and flax products. In his new connection Mr. Evans will equip a laboratory in Andover, Mass., and organize a research staff for the scientific study of flax and jute and their industrial development. The passing of Mr. Evans from the field of rubber chemistry and technology will be a decided loss. However, his many friends trust that he will be as successful in his new line as in the old.

**The Hamlin Machine Co.** has moved its Economy line of shoe machinery to the new Hilliard & Merrill Bldg., 130 Eastern Ave., Lynn, Mass.

**F. H. Ayers** has tendered his resignation as vice president of The Fisk Tire Co., Inc., Chicopee Falls, Mass. Mr. Ayers has been connected for almost a quarter of a century with the Fisk company and wishes to take a well earned vacation.

**The United States Rubber Co.** will build a one-story addition to its plant at Naugatuck, Conn. to cost about $32,000.

**Panco Rubber Co.,** Chelsea, Mass., is planning a one-story addition to the press department, 48 by 100 feet, to cost over $53,000 with equipment.

**The Premoid Mfg. Co.,** Springfield, Mass., has changed the company name to Premoid Products, Inc. A growing market has necessitated reorganization and enlargement of the plant's facilities.

**The Appleton Rubber Co.,** Franklin, Mass., rubber reclaimer and compounding specialist, electrical and automobile tapes, reports business satisfactory.

## N. T. D. A. Convention

The Ninth Annual Convention of the National Tire Dealers' Association will be held in Boston, Mass., on Nov. 19, 20, 21 and 22, at the Hotel Statler. The program and general arrangements are under the supervision of the Boston Tire Dealers' Association of which James A. Travers is president. Pierce Murphy is chairman of the general convention committee.

Among the men listed as speakers are many of national prominence. Roger W. Babson, originator of the famous Babson Reports, and a well known figure in the statistical and economic worlds, is scheduled to speak on "Looking Ahead Twenty-five Years." Frederick C. Hood, president of the rubber company at Watertown, Mass., that bears his name, is another well known figure on the program of speakers. Lincoln C. Andrews, director general of the Rubber Institute, will also address the convention.

# Rhode Island

**Edward L. Byers,** Commissioner of Labor for Rhode Island, in his monthly survey states that employment in 101 establishments, including four major industries of which rubber goods is one, showed an increase of five per cent during September as compared with the July record. This gain represents an increase of 2,706 employes. The rubber industry increased 2.1 per cent. Returns were received from five rubber and rubber goods establishments which in July showed a total employment of 6,053 persons. In August this number was 6,197 but in September had fallen to 6,180 but even then showed a 2.1 per cent gain over July.

**George Schlosser** of Woonsocket, general manager of the footwear and miscellaneous factories of the United States Rubber Co., will retire on Nov. 1 and will be succeeded by E. O. Upham, production engineer of the general division. Mr. Schlosser has been in the employ of the United States company and its subsidiaries for 46 years. The mills operated under his supervision were located at Woonsocket and Bristol in this state and over the line in Massachusetts at Millville.

**Firestone Tire Stores, Inc.,** Providence, R. I., has received a charter from the Secretary of State to conduct a tire business with an authorized capital stock of $5,000, consisting of 50 shares of common stock at $100 each. The incorporators are Erving T. Arnold, W. Vincent Sumpter and Thomas F. Black, Jr.

**Ernest I. Kilcup,** assistant treasurer of the Davol Rubber Co., Providence, R. I., and for several years a director of the National Association of Credit Men, in addressing the weekly luncheon of the Rotary Club at the Providence Biltmore Hotel on Oct. 2 declared that the daily loss in the United States through fraudulent bankruptcies amounted to more than $1,000,000 and pointed out methods by which this loss could be decreased.

**The Columbia Narrow Fabric Co.** has been doing considerable new and alteration work at its plant at Shannock, which has been increased in floor space capacity and facilities during the past summer. A second boiler has recently been installed to take care of the machinery and a new chimney at the silk division section has just been completed.

**John H. Wall and Hermann C. Farr,** of Bristol, R. I. have returned from a business trip to Canada where they installed the Wall shoe varnishing machines in the following factories: Woodstock Rubber Co., Woodstock, Ont.; Eastern Rubber Co., Actonville, Que.; and the Miner Rubber Co., Granby, Que.

**James B. Littlefield,** receiver for the Mount Hope Spinning Co., Warren, has been authorized to dispose of the real estate and machinery of that company for $102,700 and to pay a cash dividend on claims totaling $179,254. Mr. Littlefield, who has been operating the plant since June 1 states that the property has been sold to Mount Hope Mills, Inc., recently incorporated and that cotton yarns will be produced.

## Boston Woven Hose Elects New Officers

At a meeting of the board of directors of the Boston Woven Hose & Rubber Co., Boston, Mass., held on Oct. 15, shortly after the sudden and unexpected death of George E. Hall, J. Newton Smith was elected president of the company and re-elected to the office of treasurer. Mr. Smith has been identified with the company for a number of years as vice president and treasurer.

At the same meeting Arthur C. Kingston was elected a vice president. Mr. Kingston was formerly director of sales of the company under the late President George E. Hall, and will continue the active direction of sales policies as well as assuming the added duties of his new position.

## National India Rubber Activities

The baseball team that represented the N. I. R. in the Bristol Twilight League the past summer captured the championship and on the evening of Oct. 16 twelve members of the team were feted at a banquet given at the factory. Among the invited guests was William Lalor, of the comptroller's department of the United States Rubber Co. Robert J. Ford, production manager, acted as toastmaster, following a chicken dinner. The dining room was decorated with paper bells and streamers and the tables with roses, fern and gladioli, while paper hats and noisemakers were distributed to add to the gaiety of the occasion. Among the speakers was Maurice C. Smith, Jr., factory manager.

Joseph E. Robinson, superintendent of the company has been transfered to New Haven where he will take charge of the footwear factories laboratory control.

The young women employes of the plant have organized a Girls' Athletic Association with Miss Stella McCann as president; Miss Josephine Campanelli, vice president; Miss Winifred Walsh, secretary and Miss Mary Dora, treasurer.

# Eastern and Southern

**The C. P. DeLore Co.**, St. Louis, Mo., has appointed Joseph A. McNulty, 114 Liberty St., New York, N. Y., its distributer for the eastern territory. The DeLore company manufactures Baryta white barytes.

**Gates Ferguson** has been made manager of the advertising division of the Information Department of the International Telephone & Telegraph Corp., New York, N. Y. Mr. Ferguson had been advertising director of The B. F. Goodrich Co.

**Old Guard Rubber Corp.**, 19 Vestry St., New York, N. Y., has been organized for the sale of mechanical rubber goods of a high grade. The officers of the company are as follows: G. F. Covell, president; K. B. Spencer, vice president; W. N. Macdonald, secretary; A. P. Howes, treasurer.

**Frank K. Espenhain**, who resigned last March as first vice president of the Goodyear Tire & Rubber Co., has been made executive vice president of the Fisk Rubber Co., and will make his home in New York City.

**A. E. Jury** has been appointed agent of the Winnsboro Mills, Winnsboro, S. C. Mr. Jury has been serving as acting agent since June 1, when direct management of the mills was assumed by the United States Rubber Co. In addition to his principal duties at Winnsboro, Mr. Jury will continue to exercise general supervision over the textile development activities of the U. S. company.

**The B. F. Goodrich Rubber Co.**, footwear division, has opened a new sales office and stock warehouse at 711 Arch St., Philadelphia, Pa.

**The Century Carbon Co.**, 365 East Illinois St., Chicago, Ill., a subsidiary of Wishnick-Tumpeer, Inc., has purchased the natural gas holdings of the Consumers Gas Co. of Louisiana. The latter supplies the gas requirements of the Century company and its acquisition assures an ample supply of natural gas for the uninterrupted production of carbon black of the highest quality.

## Grasselli-duPont Merger

T. S. Grasselli, president of the Grasselli Chemical Co., has announced that a definite agreement to merge that company with E. I. duPont de Nemours & Co. has been reached, subject to approval of shareholders, and that a meeting of the latter would be held on Nov. 10 to ratify the proposal. If the agreement is approved it is hoped to effect the consolidation before the close of the year.

The Department of Justice, it is said, has notified the duPont interests that there is no basis for anti-trust law action in the proposed merger.

## Manufacturers Form Golf Ball Association

Eight manufacturers of golf balls united to form the Golf Ball Manufacturers' Association, 1790 Broadway, New York, N. Y., having for its purpose the placing of the golf ball manufacturing industry on a sound economical basis; the adopting of a code of ethics and establishment of such confidence between manufacturers of golf balls as shall tend to maintain a high standard of fairness in competition; bring into the industry good-fellowship and eliminate all unfair trade practices; provide a reasonable exchange of credit confidences; and work as a group with the United States Golf Association on all matters having to do with the standardization of golf balls.

The firms constituting the association are Burke Golf Co., Huntingdon Mfg. Co., A. G. Spalding & Bros., St. Mungo Mfg. Co., Silvertown Co. (represented by John Wanamaker), United States Rubber Co., Wilson-Western Sporting Goods Co., and Worthington Ball Co.

L. W. Crandall was elected president; R. B. Caverly, vice president; and E. C. Conlin, secretary and treasurer of the Association.

## Rubber Section Meeting National Safety Council

The Seventeenth Annual Congress of the National Safety Council was held in New York City, Oct. 1 to 5, 1928. This is a cooperative, nonprofit association rendering accident prevention service to its members.

The slogan of this organization is "For safety at work—on the street—in the home."

The sessions of the Rubber Section were held in Hotel McAlpin, Oct. 3. The program comprised reports of committees on nomination, engineering and statistics, an address by S. P. Thatcher, vice president U. S. Rubber Co., Detroit, Mich., and papers of the following titles, all of special rubber interest.

"A Personal Peculiarity of Workmen—Common Cause of Accident and Fire in Rubber Factories," F. J. Hoxie, Associated Factory Mutual Fire Insurance Co's., Phenix, R. I.

"Health Hazards in the Rubber Industry—Organic Accelerators and Anti-Oxidants," L. J. D. Healy, technical superintendent, Federal Division, The Fisk Rubber Co., Cudahy, Wis.

"Safety Moves Forward and Why," R. G. Knutson, commissioner, Industrial Commission, State of Wisconsin, Madison, Wis.

"Ramifications of Safety Interest," Walter S. Smith, manager, Safety Division, Milwaukee Association of Commerce, Milwaukee, Wis.

## M. A. M. A. and A. E. A. Merger

Merger of the Motor & Accessory Manufacturers Association and the Automotive Equipment Association was completed September 25 when the plan was ratified at a members' meeting of the M. & A. M. A., the A. E. A. members having previously approved the plan. The new organization, which has been named the Motor & Equipment Association has more than 800 members, including manufacturers of virtually all automotive products except complete vehicles, and wholesalers of the various automotive equipment lines, the individual companies being located in different cities of the United States and Canada.

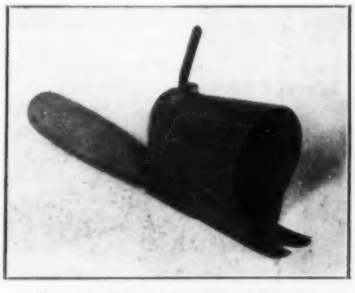
M. L. Heminway, general manager of the M. & A. M. A. for approximately ten years, will be managing director of the new association. B. W. Ruark, commissioner of the A. E. A., will be his assistant.

## Parker, Stearns Expands

Parker, Stearns & Co., Sheffield, Belmont, and Georgia Avenues, Brooklyn, N. Y., makers of fine rubber goods, have under construction as an addition to their main plant, two more stories to the two-story building erected about five years ago.

## Scrap Salvaging Bead Trimmer

The illustration pictures a simple and practical combination of bead trimming knife and scrap salvaging receiver. This hand tool was devised by a practical tire maker for trimming away the uncured scrap from the beads of drum or core built tires. In action as the scrap



**Lowe's Salvaging Bead Knife**

leaves the cutting angle of the tool it passes directly into the salvage receiver which is in the form of a truncated cone with a spring closed door at the rear end. The door is thrown forward by means of a finger trigger when the operator desires to discharge the scrap cuttings from the receiver into some storage receptacle for collection.

The scrap receiver is detachable from the knife by loosening a single small through bolt which serves to hold it fast to the blade passing through a channel integral with the base of the receiver. — The Clyde E. Lowe Co., 2976 East 81 St., Cleveland, O.

### S. A. E. Meetings

The Society of Automotive Engineers will hold its production meeting on November 22 and 23 at the Book-Cadillac Hotel, Detroit, Mich. The aeronautic meeting will take place December 5 and 6 at Hotel Stevens, Chicago, Ill.

## *Midwest*

**The Corduroy Tire Co.,** Grand Rapids, Mich., held a factory sales conference on Oct. 16 and 17 which was attended by a large group of tire distributers from Michigan, Indiana, Illinois and Ohio. The meeting was the largest ever conducted by the company. Several group trips were made through the factory, and the conference was closed with a banquet at the Rowe Hotel.

**Rosin & Granat Tire Co.,** 3762 Ogden Ave., Chicago, Ill., recently opened a new store at 941 W. 79 St. The company is a distributer of the Corduroy sidewall protection tires.

**The Cutler-Hammer Mfg. Co.,** Milwaukee, Wis., has appointed N. L. Mortensen chief engineer succeeding T. E. Barnum who has been made consulting engineer. Mr. Mortensen has been connected with the company for twenty-one years, the last five of which as assistant to Mr. Barnum.

**A. Schulman, Inc.,** Akron, O., dealer in crude and scrap rubber, has opened a Chicago branch office at 612 Congress Bank Bldg., in charge of William Haber. Mr. Haber was for a number of years associated with the Muehlstein company and for the past two or three years was engaged in the tire business in Chicago.

**E. N. Biegler Mfg. Co.,** 2730 N. Rockwell St, Chicago, Ill., manufactures Mas-Oleum Mastic and Rubber-Tex-Tile sanitary flooring.

**The Gillette Rubber Co.,** 799 Wisconsin Ave., Eau Claire, Wis., is building a one-story addition, 128 by 200 feet, with foundations for three additional stories. The work will cost in the neighborhood of $50,000, exclusive of equipment.

**The Firestone Tire & Rubber Co.,** Akron, O., will build a four-story factory branch and distributing plant at Grand Rapids, Mich., to cost about $115,000 with equipment.

**F. W. McConky,** manager of the Charlotte branch of the Goodyear Tire & Rubber Co., has been placed in charge of the Chicago office.

**The Bay City Rubber Corp.,** Bay City, Mich., is expected to be in operation by December. The company, which will manufacture a puncture-proof tube, is capitalized at $1,000,000 and will occupy a four-story plant of modern construction, 365 by 160 feet. A. E. Wheeler is president; F. W. Ward vice president, and H. J. Lucier treasurer and general manager.

## *Pacific Coast*

**Firestone Tire & Rubber Co. of California,** has, according to Chief Engineer Nelson H. Myers, completely equipped its big new tire factory in Los Angeles and is daily speeding up production to meet urgent sales demands in the entire Far West territory. The Xylos rubber reclaiming plant on the Firestone grounds is rapidly nearing compl tion. Some machinery has been installed, but considerable is on the way from the East. Late in October the Los Angeles county authorities began the paving of Firestone Boulevard, formerly Manchester Ave., with heavy-duty concrete. This highway fronts the big tire plant, and when it is finished the other streets about the factory will be also paved. The street railway company has been induced to provide bus transportation for the three shifts of employes. General Sales Manager R. J. Cope announces the appointment of G. McNeil, long assistant branch manager in Los Angeles, as manager of the Seattle branch. During the past couple of weeks Firestone has been carrying on an elaborate super-tire educational campaign on the Coast.

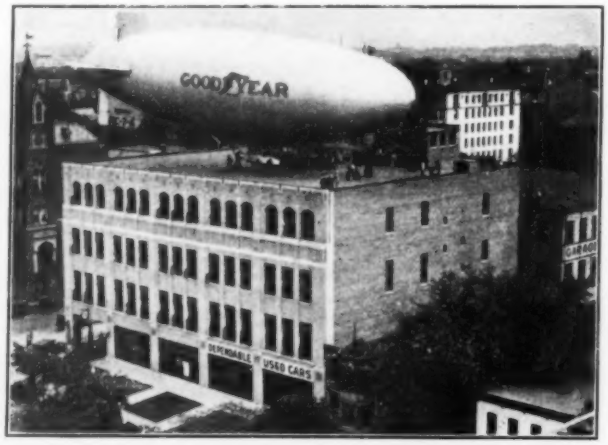
**Fisk Rubber Co.,** Chicopee Falls, Mass., is again being credited with plans for the building of a factory on the Pacific Coast at an early date, but those in close touch with the concern say that such a project is not expected for a year at least, and that meanwhile the big office and distribution headquarters being erected at 35th and Hope Sts., Los Angeles, will fully serve the needs of the factory and its selling organization, the Fisk Tire Co., Inc. This structure, which will house the Pacific Coast Division and have storage room for half a million dollars' worth of tires, etc., is scheduled to be ready for occupancy December 8. The division, which is headed by C. C. Fletcher, who has just returned from a conference with executives at Chicopee Falls and New York, had a general sales conference Oct. 24 in Los Angeles. A new appointment is that of Frank M. Hammond as San Francisco district manager. He had long been active with the Fisk sales force in Ohio.

**Pioneer Rubber Mills** of San Francisco has been awarded the contract for 12,000 feet of double-jacketed fire hose by the city of Oakland. The sale was handled by C. M. Bliven, manager of engineering sales for the Pioneer company, and competition from bidders from all parts of the country was keen.

**Goodyear Tire & Rubber Co. of California** is averaging close to 11,000 tires a day at its Los Angeles plant, and it is believed that the spring-dating orders which will start shortly will well sustain this high record. Captained by D. W. Sandford, head of sales, over fifty branch managers and assistants from the Coast territory attended the big Goodyear homecoming at the parent works in Akron Oct. 15, 16, and 17. A. F. Osterloh, formerly secretary of the Goodyear company in Akron and afterward vice president and general manager of the Los Angeles plant, has joined the advertising firm of Erwin, Wasey & Co., Ltd., Chicago.

**Firestone branches** to cost about $75,000 each are being planned for Sacramento, Calif., and Phoenix, Ariz. R. C. Tucker, Firestone trade sales manager at Akron, and assistant to General Sales Manager L. R. Jackson, was a recent visitor at the new Firestone factory in Los Angeles.

**Pacific Roessler & Hasslacher Co.'s** rubber reclaiming plant at El Monte, Calif., is working 24 hours a day, according to General Manager F. S. Pratt, and the steadily increasing sales may soon necessitate much addition to the equipment.




**Goodyear Dirigible "Puritan" Delivering Passengers on the Roof of a Washington, D. C., Building**

**A. Jae Sears** succeeds A. G. Partridge as manager of the western division for the Goodyear Tire & Rubber Co. Mr. Sears joined the company in 1912 and had been manager of the Chicago

**A. Jae Sears**

branch since 1924. Another shift in the Goodyear's sales personnel is announced in the transfer of C. H. Williams, manager of the dealer development department, to Los Angeles as assistant to J. K. Hough, manager of Coast Division sales.

**United States Rubber Co.'s** tires, footwear, mechanicals, and other rubber products have been selling well above the quota set by the company for the Coast section, according to Pacific Coast Division Manager J. B. Brady who left on Oct. 17 for his annual conference with company executives in New York. There have been no changes for many months in the major line-up of the Coast sales force. H. A. Farr, in charge of tires, and E. H. White, in charge of footwear, both of the Western Division and with headquarters in San Francisco, have lately been studying trade conditions in the Southwest.

**Los Angeles Group,** Rubber Division, American Chemical Society, had its fall dinner and meeting Tuesday evening, Oct. 16, at the Mary Louise Restaurant, 2200 W. 7 St., Los Angeles, Calif., and many new members were enrolled. A feature was a theoretical and practical talk by C. R. Park, noted rubber research worker, on "Vulcanization," followed with a general discussion on curing problems. President Stringfield appointed Messrs. Pratt, Shawger and Freeman as a committee to submit nominations to be considered at the coming December meeting.

**The Griffith Rubber Mills,** Portland, Ore., maker of paper mill rolls, has a plant of 20,000 feet in area that adjoins a wharf and railroad at 22nd and Nicolai Sts. The officers are: President, general manager, and treasurer, C. R. Griffith; vice president, Franklin T. Griffith; secretary, L. P. Griffith; and assistant manager, U. A. Keppinger.

**Patterson-Ballagh Corp.,** 65th St. and Wilmington Boulevard, Los Angeles, is one of the newer rubber manufacturing concerns. It specializes on oil well supplies, its chief product being the Bettis patented rubber protector for drill stems. C. L. Patterson is president, Charles Sherman vice president, and J. C. Ballagh, secretary-treasurer.

**Howard F. Smith,** long prominent in the executive branch of the General Tire & Rubber Co., Akron, O., will establish the Howard F. Smith Co. in San Francisco, Calif. The company will be a distributer for General tires.

**The B. F. Goodrich Co.,** has taken possession of a new two-story concrete building with basement built for it on Brannan near Third St., San Francisco, Calif., on a long lease. It will be used chiefly for storing and distributing products of the subsidiary Goodrich factory in California.

**The Paraffine Companies, Inc.,** has acquired the entire capital stock of the Plant Rubber & Asbestos Works. The latter company has been in business in San Francisco for more than twenty-five years as manufacturer of magnesia non-conducting coverings for power and heating systems, asbestos air cell coverings, molded rubber goods, etc. Although no definite announcement has been made of future plans, it is generally thought that no changes will be made in the present organization of the Plant company. It is understood that S. L. Plant, president, will probably retire, and Charles A. Wright, manager of the organization, will continue in that capacity.

**Olympic Tire & Rubber Co.,** Ninth Ave., and Thomas St., Seattle, Wash., although one of the youngest tire-making concerns in the West, having been started scarcely over a year ago, is already doing very well and now engrosses all the attention of its originator, William O. Standring.

**Western Sulphur Industries Co.,** of San Francisco, Calif., maker of chemicals for the rubber and other industries, is planning a considerable expansion, its programme including the building of a large auxiliary plant in Los Angeles. Charles E. Blaylack is president and Theodore Dorsch, vice president.

**Seiberling Rubber Co.'s** sales force in the Pacific Coast territory was well represented at the company's big conference at Akron on October 4, 5 and 6. The delegation was headed by Pacific Coast Division Manager C. D. Reynolds, whose headquarters are at 60 Mill St., San Francisco, Calif., and who recently moved with his family from Portland to Oakland.

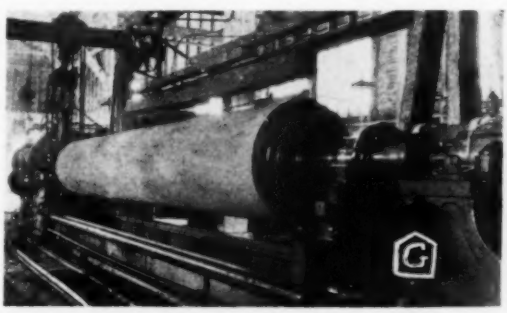
**Latex Products Co.,** 142 Stillman St., San Francisco, Calif., which is owned and operated by F. W. Poole, and which has a well-equipped factory for the production of seamless rubber goods, reports trade as very good in druggists' sundries, and especially in pouches and finger cots.

## Covering Paper Mill Rolls

ONE of the many interesting branches of the rubber industry is the covering of paper mill rolls, and on the Pacific Coast particularly it has reached a high development. Paper mills are large, numerous and steadily increasing in the Northwest and the heavily-wooded areas of Western-Canada; their operators find it convenient to get new or old rolls recovered at the rubber factories on the Pacific Coast.

One plant which is especially equipped for such production, makes press rolls under U. S. patent No. 1,537,439 issued to Charles R. Griffith. These rolls are long, hollow cast iron cylinders with a heavy outer coating of vulcanized rubber and designed to express surplus water from paper stock. In order that paper sheet may not adhere to the rubber and be readily repelled the surface is made porous or cellular either by mixing felt or cotton particles, coarse sawdust, etc., in the rubber; by compounding the rubber with carbonate of soda or ammonia, which in curing leaves minute air or gas cells; or by mixing in grass seed, etc., which cause porosity while being consumed by heat during the cure. By varying the compound, different degrees of hardness may be obtained, and the roll may be repeatedly ground.

This concern recently recovered two press rolls from a 234-inch news print machine at the Hawley paper mill at Oregon City, requiring the installation of an extra large horizontal vulcanizer, although the plant had previously recovered 236-inch rolls for the Pacific Mills, Ltd., and the Powell River Co., Ltd., in British Columbia. The Hawley rolls had a 1½-inch rubber covering and weighed over 16 tons. Another roll of similar dimensions was recovered lately for the Crown-Zellerbach Mills of Port Angeles, Wash. A large roll grinder is being installed which will greatly increase the plant's efficiency.



**Paper Mill Roll Lathe in Griffith Rubber Mills, Portland, Ore.**

## Los Angeles Site for Goodyear-Zeppelin Plant

Goodyear Tire & Rubber Co. directors at the main office of the company in Akron have been seriously considering the selection of Los Angeles as the site for construction operations of the Goodyear-Zeppelin Corp., recently awarded the contract by the United States Government to build two giant airships, each almost three times the size of the noted dirigible, "Shenandoah." The company has made a careful study of climatic, industrial, atmospheric, and other conditions in the vicinity of the Southwest metropolis and, it is said, has been well impressed with the findings. The plans involve the building of a hangar, the largest in the world, 1,200 feet long, 200 feet high, and 332 feet wide, and the use of 100 acres of land for factory purposes. The plant would have to be adjacent to a large testing field. The latter the Los Angeles authorities have already provided by securing an option on Mines Field in the Inglewood section and which is a mile square. Los Angeles has also obtained an option on 360 acres adjoining, which would thus provide an airport of 1,000 acres and an ample area for all dirigible and airplane operations. The company investment would be over $2,500,000 and it is said work would be given to about 2,000 persons. Incidentally many other aircraft industries would soon cluster about the big Zeppelin plant, if it be established. In an endeavor to meet the requirements of the airship builders, President Bonelli of the city council, Vice President Crandall and Secretary Arnoll of the Los Angeles Chamber of Commerce have been conferring in Akron with Goodyear officials during the past fortnight, and they report that the prospects for making their city the Detroit of America in aviation as very encouraging.

## University of Akron

Two gifts of $10,000 each from P. W. Litchfield, president of the Goodyear Tire & Rubber Co., and F. H. Mason, vice president of The B. F. Goodrich Co., were reported in the drive of alumni and former students of the University of Akron. The university offers a very fine course in rubber chemistry, many of its graduates holding important positions in chemical laboratories in and around Akron.

## C. P. Hall Co. Forms California Organization

The growing importance of the West Coast trade has led to the organization of the C. P. Hall Co., Inc., of California, with headquarters at Los Angeles. The new company, which will be under the direction of B. E. Dougherty, vice president and general manager of the California company, will be operated entirely apart from the Akron company. Mr. Dougherty is well known in both the supplying and manufacturing ends of the rubber industry.

B. E. Dougherty

Warehouse facilities, in addition to the sales office, will be maintained in Los Angeles and also at Oakland, Calif. In addition to the principal products of the parent company, the organization will carry a number of additional lines. The list of products includes: Stabilite and Para-Flux, manufactured by the C. P. Hall Co. of Akron; will represent the J. P. Preston Co. on mica; the General Magnesite Magnesia Co. on magnesia; Thompson Weinman Co. on clays; and Godfrey L. Cabot, Inc., on carbon black. Other lines will be taken on from time to time.

Dr. Jan Teppema, C. C. Daily and R. P. Hall form the nucleus of the Akron staff which includes C. P. Hall.

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## Zeppelin Greeted by Arnstein

Among the large number of enthusiasts to greet the Graf-Zeppelin on her arrival at Lakehurst, none waited with more anxiety and hope than did Dr. Karl Arnstein to greet his former associate at Friedrichshafen, Dr. Hugo Eckener. Dr. Arnstein, who is vice president of the Goodyear-Zeppelin Co., designed the Los Angeles, first airship to cross the ocean. Sharing his desire to see old friends and collaborators on as many as 70 Zeppelins, were 12 technicians of the Goodyear-Zeppelin Co., all of them veteran airship builders who gained their technical knowledge at Friedrichshafen, and 12 other employes of the company all of whom accompanied Dr. Arnstein to Lakehurst.

## Activities of the Pacific Goodrich Co.

Pacific Goodrich Rubber Co., was well represented at the general sales conference of Goodrich interests at Chicago on Oct. 18 and 19. The delegation included all the branch managers between the Rockies and the Coast and many of the factory executives from Los Angeles, headed by General Sales Manager Frank E. Titus. Production at the California plant is steadily increasing, daily output now averaging over 3,800 tires. At the present rate of demand it is estimated that the 5,000 capacity of the plant will be reached by January. Demand has been so strong for some sizes that the plant has found it necessary to get supplies of tires from the parent works in Akron. In some cases the California plant has been able to help out the Akron works.

Pacific Goodrich Rubber Co. announces several new appointments. Jay S. Smith, who has been assistant to General Sales Manager Frank E. Titus, is now manager of the automobile tire department. W. G. Dellabough, formerly Buffalo branch manager and recently doing specialty work in Akron, has been made district manager in Seattle, his territory also including Spokane and Portland. F. D. Ranyard, formerly Seattle branch manager, is now manager of Goodrich and Diamond mechanical rubber goods sales in the Northwest. Emmett Show, formerly Diamond and Brunswick manager in Southern Califronia, is now stationed at the Goodrich factory in Los Angeles as manager of sales for the specialization department. Cliff Taylor, formerly special sales representative in Los Angeles, is now manager of the Portland branch, succeeding C. B. Cadwell, who resigned. Vice President and General Manager Samuel B. Robertson has just returned from a two weeks' conference with executives at the Akron works. The Los Angeles plant was recently inspected by two notable visitors, Baron Nakagawa and M. Miwamatsu, directors of the Yokohama Rubber Co., the Goodrich concern in Japan.

BRISTOL CO., WATERBURY, CONN., MANUfacturer of temperature recording instruments, has filed plans for one-story addition to plant at Platts Mills, 48 by 140 to cost over $40,000 with equipment. It is said that another unit will be built soon.

# *Canada*

A very substantial price reduction has been made in garden and lawn hose from the levels in force last season. Officials state that conditions in the United States market where prices are now quite low, are partly accountable for the reductions in Canadian prices. The placing discount of five per cent allowed on former prices has been discontinued, as is also the five per cent discount for full reel orders. Terms remain unchanged from a year ago, deliveries made from January 1 to June 30, 1929, being quoted two per cent cash discount for payment on July 10 or net July 31. There is not much news about rubber footwear at this particular season of the year. Merchants are now receiving fall supplies and no price changes are anticipated before at least the first of the New Year. Women's overshoes for the coming winter will be in a variety of colors similar to those of last year, and there is not much change in the styles.

**W. A. Eden,** president of the Dominion Rubber Co., Ltd., presided at the recent banquet which brought to a close a two-day convention of Dominion tire depot owners of the provinces of Quebec and Ontario held at the Dominion factory at Kitchener. Ont.

The convention program included a complete tour of the company's big tire factory. There were exhibits of the latest vulcanizing and repair machinery and accessories, extensive lectures and practical demonstrations by the experts in charge, educational moving pictures of rubber growing and sales talks. The convention was addressed by prominent speakers, including Hon. Charles Stewart, Minister of the Interior.

**Canadian Goodrich Co., Ltd.,** Kitchener, Ont., will begin an expansion program within 30 days, costing $250,000. This includes a two-story addition to its main building, and a one-story addition to the wing completed last January. J. W. Jordan, manager of the company says: "It is necessary to provide more facilities both for the manufacture of tires and rubber footwear. Our business has grown so fast that we are pressed with the need for expansion." This end will be realized since the additional accommodation will make an increase of 35 per cent of the present output possible.

**The Granby Elastic Web, Ltd.,** Granby, Que., has built a 30,000 square foot addition to its factories where modern machinery will be installed for weaving all elastic products, such as corsets, suspenders, garter elastic, etc. When the plant is completed, it is planned to have more than 1,000 braiders running night and day. Products of the company are finding a ready sale in the Canadian market with a good share of export business.

**The Miner Rubber Co., Ltd.,** Granby, Que., has issued a broadside showing colored illustrations of over thirty of their lines of tennis and outing shoes for the 1929 season.

**The Seiberling Rubber Co. of Canada, Ltd.,** Toronto, Ont., announces the appointment of N. E. Horton as manager of the sales promotion department. Mr. Horton brings to his new position many years of sales organizing work and advertising experience all of which has carried with it additional executive responsibilities with leading Canadian and American companies.

**Lawrence S. Hewes,** who has been associated with the Rubberset Co., Ltd., Toronto and Gravenhurst, Ont., for nearly twelve years is taking over the general management and secretaryship of the company on account of the resignation of his father, F. L. Hewes, who has been with the company ever since it came to Canada.

**J. Myles,** general manager and **G. H. Nickel,** sales manager, The Columbus Rubber Co., Montreal, Ltd., are making their annual business trip to the Pacific Coast.

**W. E. Wing** and **J. M. Newton,** who have been in charge of the footwear department of the Kaufman Rubber Co., Ltd., Kitchener, Ont., have recently severed their connection with this firm.

**Woodstock Rubber Co., Ltd.,** Woodstock, Ont., is now showing to the retail trade a complete range of staple tennis goods for men, women and children in bal, oxfords, and sandal types for misses and children.

**Canadian Goodrich Co., Ltd.** Several directors of this company flew from Toronto to Montreal recently in a Fairchild monoplane piloted by Cy Caldwell. J. W. Jackson, vice president and general manager; A. Koehler, general sales manager; Mr. Wacker, sales division, and Mr. Kerney, of the fleet owners' equipment division all flew from Toronto to pay their respects to Roy A. Gunther the Montreal manager.

**B. H. Warren** has recently joined the selling force of the Gutta Percha & Rubber, Ltd., Toronto, Ont., and is covering Toronto, east to Gananoque, and north to Haliburton, returning down the east side of Lake Simcoe.

**Sir John Beharrel,** managing director of the Dunlop Rubber Co., in England and a prominent British capitalist was a recent visitor to Montreal in connection with the Nobel Industries with which he is associated.

**Albert E. Penfold,** Warwickshire, England, and until recently with the Dunlop Rubber Co., Ltd., has severed his affiliation with that firm and is now a free lance. We understand that it is his intention to develop on new principles the manufacture of golf balls, sports equipment and rubber goods.

## English Dunlop Company Acquires Canadian Dunlop

The Dunlop Rubber Co., of England has acquired controlling interest in the Canadian Dunlop company as a unit in a $200,000,000 merger, as announced by Sir John George Beharrel, managing director of the English firm who is at present in Toronto. This merger links up the most important rubber interests in the Empire as the transaction involves the transfer of the assets of the Dunlop company in the Far East to the English concern.

The Canadian company, originally an offshoot of the English company was purchased by three Canadian financiers from them some years ago. In 1899 it was incorporated and took over the Canadian business of the American Dunlop Tire Co., a branch of the original Dunlop Pneumatic Tire Co. of London, England. The three Canadians in the deal were Hon. E. B. Ryckman, Senator Cox and Warren Y. Soper.

It is understood that no change in the management of the concern is contemplated at present, and no policy of expansion has been announced. It is rumored, however, that the next step of the English concern will be to acquire control of the company known as the Dunlop Tire & Rubber Corp. of America.

## Horse Head Zinc in Byrd Expedition

When the telephone and radio apparatus carried by the Byrd Antarctic Expedition is set up far from civilization in the frozen wastes of the South, the power supplied by the batteries will be dependent upon the performance of a New Jersey Zinc Co. product—Horse Head rolled zinc. This metal, in form of a cylinder, acts as the positive element in the batteries which were manufactured by The Waterbury Battery Co.

## United States Crude Rubber Imports

Preliminary returns for the customs districts of New York and Massachusetts show that during Sept. 1928, the following amounts of crude rubber and liquid latex were imported into the United States through these two customs districts:

| Customs Districts | Quantity | | Value, Dollars | Unit Value, Cents |
|---|---|---|---|---|
| | Pounds | Long Tons | | |
| New York | 81,395,439 | 36,337 | 15,111,493 | 18.57 |
| Massachusetts | 2,476,686 | 1,106 | 522,912 | 21.11 |
| Total | 83,872,125 | 37,443 | 15,634,405 | 18.64 |

The two customs districts named above accounted for 95.98 per cent of total United States rubber imports during the calendar year 1926 and for 93.46 per cent in 1927.

## Uganda

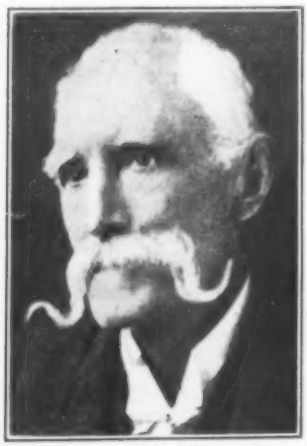
It is officially reported that 25 per cent of the rubber plantations in Uganda have stopped tapping and that many others are producing only on a small scale.

# *Obituary*

## Sir H. A. Wickham Pioneer of the Planting Industry

The passing of Sir Henry Alexander Wickham in London on Sept. 27, at the age of 82, has revived many interesting memories of the origination some fifty years ago of rubber cultivation in the tropic Far East, and in which enterprise he played a most conspicuous rôle.

Sir Henry was born in May, 1846, and spent the early years of his life as an ex-



Sir H. A. Wickham

plorer, chiefly in the British service, in Central America, the basins of the Amazon and Orinoco in South America, in Malaya, Ceylon, New Guinea, Australia, and the Pacific Islands, studying plant cultural conditions and making many planting experiments. He early realized the possibility of raising rubber in Eastern Equatoria under conditions akin to those obtaining in the tropics of the Western Hemisphere, and is recorded as urging his government in 1870 to undertake such work. Sir Joseph D. Hooker of Kew Gardens, London, was one of the few to be favorably impressed with the suggestion, and he interested Sir Clements Markham of the India Office. The latter sent James Collins to Para for *Hevea brasiliensis* seeds, but the latter, although germinating at Kew, failed to live when sent to Calcutta. Later he sent two others to collect seeds in Brazil, Robert Cross, who got 1,000 plants safely to Kew, and Wickham, who was even more successful. The result was that numerous seedlings of both arrived in Ceylon in 1876 scarcely one month apart.

Wickham's strategy in transporting the precious seeds from the Brazilian empire supplies one of the most stirring chapters in the history of rubber. In Santarem, Brazil, in 1870, dissatisfied with the primitive method of collecting rubber in the forests, he set out a small rubber plantation and learned enough on it to convince him of the feasibility of growing rubber of similar quality and in unlimited quantity in equally-favored climes. Repeated urging finally brought him a commission to gather and forward hevea seeds, and he started on this work in 1875, patiently waiting an opportunity to get them safely out of the country. The long-awaited chance came in 1876, when the British steamer Amazonas happened to arrive and unload a cargo. But the master of the vessel being without cash to bring back to England other merchandise, in a quandary availed himself of Wickham's offer to charter the steamer for the India Office, depending upon delivery of cargo for payment.

Wickham then started up the Tapajos River in a canoe, and, after a perilous journey, reached a place where friendly Tapuyo Indians had been collecting seeds for him. These seeds had been packed by Indian girls between layers of wild banana leaf in baskets of split cane. The baskets containing 70,000 seeds were stored in the hold of the steamer, hasty clearance being obtained at Para for "rare botanic specimens" for Queen Victoria's royal gardens. Soon the precious freight was on its way, and hardly two weeks after its arrival at Kew the cargo had been transformed into thousands of little rubber plants destined to fairly revolutionize the crude rubber industry.

While great fortunes were made by others in exploiting rubber planting, Sir Henry derived but little advantage in this way. However, in 1920 he was knighted by King George V; and in 1911 he was presented with £1,000 and an annuity by the Rubber Growers' Association of London and the Planters' Association of Ceylon and Malaya. On his 80th birthday in 1926 he received a check from an unnamed American for £5,000 in recognition of his services to the rubber manufacturing industry, and in the same year the governments of the Straits Settlements and the Federated Malay States made him a grant of £8,000.

Sir Henry in 1912 invented an apparatus for coagulating latex with palm smoke to produce a rubber that would be a counterpart of hard fine Para, and in the same year an improved tapping knife. He was the author of "A Journey Through the Wilderness" and a work on the introduction, planting, and cultivating of rubber.

## Spencer Turner

Spencer Turner, president of Turner, Halsey & Co., cotton goods commission merchants at 74 Leonard St., New York, N. Y., died Oct. 18 at his residence, 791 Park Ave., at the age of forty-four, after an illness of six months.

Mr. Turner was president of the Association of Cotton Textile Merchants of New York and of the Cotton Duck Association of New York. He was a member of the advisory board of the Chemical National Bank, and a director of several cotton manufacturing corporations, including the Mount Vernon-Woodberry Mills, Inc., of Baltimore, and the Chadwick-Hoskins Co. of Charlotte, N. C.

Funeral services were held in St. George's Church and interment at Woodlawn Cemetery.

## Expert Plant Executive Summoned by Death

A pioneer in the Akron rubber industry, the passing of Michael A. Flynn, on Sept. 27, is mourned not alone by the leaders in the world of rubber but by his fellow workers whose friendship he gained through his interest and help during his long years of service. His death, as the result of a heart attack, was unexpected, though he had been slightly ill for about a week.

Born fifty-seven years ago in the County of Waterford, Ireland, Mr. Flynn received his education in the schools of Boston, Mass., starting to work as a young lad of fourteen years. He began as an office boy

M. A. Flynn

with the Revere Rubber Co., Chelsea, Mass., and remained with the same company until he reached the age of twenty-eight. In 1898 he accompanied A. H. Marks to Akron and was made foreman of the bicycle department of the old Diamond Rubber Co. Following the merger in 1912 of the Diamond and Goodrich companies, he was promoted to the superintendency of the tire department, a post he held until 1919, when he became director of labor.

As director of labor, Mr. Flynn employed thousands of men and women and their welfare and interest were ever foremost with him; he was at once their friend and tribunal to whom they might bring their problems and worries always sure of kindly, wholesome advice.

In May, 1924, after twenty-six years of active service with the Goodrich company, he resigned to work upon an invention, devoting most of his time to developing a new type of mold for the large balloon tire.

Mr. Flynn was a past navigator of the Fourth Degree, Knights of Columbus, and past grand knight of the same order. He was a member of the Akron City Club, Portage Country Club, Elks, and was on

the executive board of the Akron Area, Boy Scouts of America.

Funeral services were held Sept. 29, at St. Vincent's Church, a requiem high mass being sung by the Rev. Hilary Zwisler. Burial was in St. Vincent's cemetery.

Besides his widow, he is survived by a daughter, Mrs. W. A. Clark and a son, William F. Flynn.

## Well Known Rubber Executive

Alexander M. Paul, president and treasurer of the Davidson Rubber Co., Boston, Mass., died Sept. 14, 1928. He was born April 13, 1867, in Halifax, Nova Scotia, reared in Boston, and educated in the Latin School of that city. In 1885 he began his business career with the Conant Rubber Co., Boston, and after three years was transferred to the Hartford, Conn., store of the same company where he remained until 1891 when he went to Andover, N. J., in the employ of the Standard Musical String Co. Five years later he amalgamated all of the factories making

A. M. Paul

strings for musical instruments as the National Musical String Co., of which he was secretary and treasurer. In 1897 he built a modern factory at New Brunswick, N. J., for this corporation and two years later sold out his interest in the company.

Mr. Paul became general manager of the Boston Woven Hose & Rubber Co. in 1900, his success in this capacity being very marked. Within the space of a few years the sales under his direction increased from $1,000,000 to $3,000,000 annually.

In 1907 he left the Boston Woven Hose & Rubber Co. and purchased the sole ownership of the old established Davidson Rubber Co. of Boston. There his genius for organization again was effectively displayed by his success in rehabilitating that concern. Within 13 years he reduced the company's lines of manufacture from 1,600 items to 6. Each item retained was standardized in but one color, one size and one style. Sales effort was reduced to use of the mails and advertising. The results attained proved the genius of the man as an executive.

He was director of the New England Rubber Club, 1901-1905 and 1907-1909 and its president in 1906-1907; director and honorary vice president of the Rubber Association of America, 1907-1915 and ex-officio director of that organization from 1915 to the end of his life.

Alexander Paul was an enthusiastic sportsman who loved shooting and fishing. While not specifically a club man he was a member of the Algonquin Club of Boston and the New York Athletic Club.

## Former Director of The B. F. Goodrich Co.

Howard Edwin Raymond, former director and vice chairman, and for fully a quarter of a century the sales head of The B. F. Goodrich Co., died of pneumonia Oct. 8 at his home, 45 Park Ave., New York, at the age of 64.

Mr. Raymond was born in Brooklyn and began earning his living there as a wrapper boy in the Frederick Loeser department store. Next he spent a few years in the real estate business, quitting it in 1894 to become sales manager of the Sterling Bicycle Co. in Chicago. A year later he accepted an offer from The B. F. Goodrich Co. to act as its sales manager in Akron. From that time on for twenty-five years he knew only Goodrich and Goodrich knew him to its considerable advantage. He directed the expansion of the business in domestic and foreign fields and also supervised its advertising. To him fell the task of establishing The B. F. Goodrich Co., Ltd., of London; the Société Française B. F. Goodrich, of Paris; and the Yokohama Rubber Co., of Tokio, of which he was vice president.

The first notable advance for Mr. Raymond came in 1912, when The B. F. Goodrich and Diamond Rubber Co. were merged. In addition to being made sales manager, he was also chosen as second vice president, moving his offices two years later from Akron to New York. As chairman of the Railway Supplies Division of the War Service Committee of the Rubber Industry he gave much of his time to patriotic work and effected many important acts in standardization, since incorporated into regular practice and which have been of much benefit to the entire rubber trade. Much to the regret of his associates, in 1920, he resigned official connection with the Goodrich company and retired to private life.

Mr. Raymond had been one of the best-known men in the trade, exceptionally resourceful and aggressive, yet with an engaging manner and a reputation for fair dealing that won for him a host of warm friends in this country and abroad. His chief diversion was yachting and he was commodore of the Shelter Island Yacht Club and president of the Shelter Island Heights' Association. He was also a member of the New York Yacht, Columbia Yacht, and Union League Clubs, and a charter member of the Chicago Athletic Club. In 1923 he was president of the American League for Wheelmen, and helped to formulate its rules for bicycle races. He was unmarried and he leaves two cousins, Miss Nettie Raymond and Mrs. Bessie Gateson, of Brooklyn, and an aunt, Mrs. J. Walker, of New Haven.

Funeral services were held Oct. 11 at the Universalist Church of Our Father, Brooklyn, N. Y.

## Leader of Rubber Industry Succumbs to Heart Attack

George Edward Hall, president and general manager of the Boston Woven Hose & Rubber Co., died of heart failure Oct. 3, at Osterville, Mass. Before he became a leader in the rubber industry he had been nationally prominent in the paper trade. He was noted for his irrepressible energy and enthusiasm, his cheerfulness,

George E. Hall

and his consideration for the welfare of the company's employes.

Mr. Hall was born Aug. 2, 1868, in Brattleboro, Vermont. After attending the grammar schools there he entered the Vermont Academy from which he graduated in 1886. Entering the employ of the J. J. Rogers Co., paper manufacturer, he soon became superintendent. Next he was superintendent and sulphite expert for the International Paper Co. and following this was secretary and manager of manufacturing of the St. Regis Taggart Paper Co.

In July, 1907, Mr. Hall transferred his attention from paper to rubber, accepting at that time the position of general manager of the Boston Woven Hose & Rubber Co. at Cambridge, Mass. In 1910 he was promoted to the vice presidency, while continuing as general manager, and in 1918 he was elected president and general manager. On that occasion it was stated that during his eleven years' leadership the business of the company had increased from $2,000,000 to $10,000,00 a year.

In 1924 he was elected a director of the Rubber Association of America and was appointed on the executive committee of the Mechanical Rubber Goods Manufacturers' Division, and in 1925 he was elected a member of the executive committee of the Associated Industries of Massachusetts.

Besides being a member of the Rubber Association, Mr. Hall was also a member of the Boston Chamber of Commerce, the Algonquin and Exchange Clubs of Boston, the New York Club of New York City, and the Dedham Country and Polo Club of Dedham, Mass. He was a director of the Beacon and State Street Trust Companies of Boston and also the Liberty Mutual Insurance Co. of Boston.

While Mr. Hall had been in failing health for some time and had been gradually relinquishing the control of the business to the efficient organization he had built up, he was at his desk in the office on Friday, Sept. 28, leaving in the afternoon for a week's rest and recreation on Cape Cod with members of his family and friends. He was in unusually good spirits and appeared to be enjoying the brief relaxation from business. About midnight he awakened suddenly, complained of feeling ill, and suggested that a doctor be sent for, but before the arrival of the physician in about 20 minutes, Mr. Hall had passed on.

He leaves a widow, Harriet E. (Ames) Hall; four daughters, Catherine, Alice, Jean and Elizabeth, and a son, George E. Hall, Jr.

The funeral took place on Saturday, Oct. 6, burial being made at North Easton, Mass.

## Well Known Mechanical Engineer

Alfred T. Oakley, who passed away Oct. 22 in the Memorial Hospital, Painesville, O., spent practically his entire business life in the rubber industry. He was fifty-four years of age and retired several years ago to devote much of his spare time to the care of his country home and portraying in oil many pastoral scenes.

Mr. Oakley was a mechanical engineer of recognized ability and had been connected with such firms as the Cleveland Rubber Co., The B. F. Goodrich Co., the Goodyear Tire & Rubber Co., The Republic Rubber Co. and the Essex Rubber Co., all of which firms he served with particular regard to reclaiming plant design and construction.

He is survived by his wife, mother, three brothers, C. H. and L. M. Oakley of Trenton, N. J., and William M. Oakley of Detroit, Mich., and a sister, Mrs. Martha M. Brunner, also of Trenton.

Services were held at his home at Thompson, Geauga County, O., Oct. 24, interment to take place at the convenience of the family.

## Widow of Joseph Davol

Mrs. Mary E. Davol, widow of Joseph Davol, founder of the Davol Rubber Co., Providence, R. I., died Oct. 14 at her home, 46 Parkis Ave., Providence, R. I. Although in apparently good health up to the latter part of last winter, she failed rapidly during the last few months. She was married to Mr. Davol in 1862, and is survived by a son, Charles J. Davol, who is president, treasurer and general manager of the Davol Rubber Co. Her will probated in Municipal Court disposes of an estate assessed at $1,161,260, making her son Charles and a grandson the chief beneficiaries. Between $20,000 and $25,000 is given to institutions. Her son receives the homestead estate and its contents and her entire interests in the Davol Rubber Co.

## Mrs. G. M. Stadelman

Mrs. Gertrude G. Stadelman, widow of the late George M. Stadelman, former president of the Goodyear Tire & Rubber Co., died Oct. 3 at a sanatorium in Battle Creek, Mich., where she had been staying for several months. Mrs. Stadelman had been prominent in Akron social and club circles since taking up her residence there in 1901.

Funeral services were held at the family home, Perkins Hill, Akron, Oct. 5, the Rev. Stephen E. Keeler, rector of St. Paul's Episcopal Church, officiating. Burial was in Glendale cemetery.

## Statement of India Rubber World

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of INDIA RUBBER WORLD, published monthly, at New York, N. Y., for October 1, 1928.

State of New York } ss.:
County of New York }

Before me, a notary public in and for the state and county aforesaid, personally appeared E. M. Hoag, who, having been duly sworn according to law, deposes and says that she is the business manager of the INDIA RUBBER WORLD and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Federated Business Publications, Inc., 420 Lexington Ave., New York, N. Y.; editor, Henry C. Pearson, 420 Lexington Ave., New York, N. Y.; managing editor, William M. Morse, 420 Lexington Ave., New York, N. Y.; business manager, E. M. Hoag, 420 Lexington Ave., New York, N. Y.

2. That the owner is: Federated Business Publications, Inc., Edward Lyman Bill, Inc., Bill, Brown & Bill Publishing Corp., Caroline L. Bill, Raymond Bill, Edward Lyman Bill, and Randolph Brown.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by her.

E. M. HOAG, Business Manager.

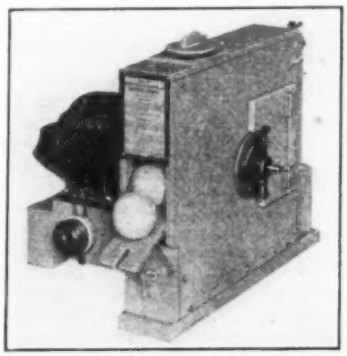
Sworn to and subscribed before me this 28th day of September, 1928.

[SEAL] WM. A. LOW,

Notary Public, N. Y. Co. No. 695, Reg. No. 9502.
Certificate filed in Queens Co. No. 4826.
(My commission expires March 30, 1929.)

## Reviving Tennis Balls

To save a great number of tennis balls now discarded because they have lost their fuzzy surface and their flight can not be accurately controlled, and also to clean them so as to increase their visibility, the Tennis Specialties Co., 52 California St., San Francisco, Calif., manufactures the



**Tennis Ball Renapping Machine**

Smilie tennis ball re-napping and whitening machine. The device, which operates from a light socket, reconditions three or four balls in five minutes. A motor whirls the balls around a circular track and below the latter and in slight contact is a ribbon having a lot of fine needle points which pick up the nap. A little whiting put inside helps in the dry cleaning and makes the balls look almost like new.

## Property Investment and Net Profits

A well known statistical company[1] has analyzed the property investment, and its relation to net profit, of 544 industrial companies. It appears there are no set rules, so far as the property account is concerned. The only principle approaching a rule is the one which dictates that before new units are added, a scientific study of existing and prospective costs should be made.

But it is true, for obvious reasons, that on the average those concerns which are able to successfully conduct their enterprises on the smallest amount of property occupy the most secure positions in times of stress.

On the average, 544 concerns in all lines required almost $7 worth of property to bring in every $1 of net profit last year. The average of nineteen manufacturing companies reporting was $7.02 of property required to produce $1 of net profit in 1926, and $5.98 of property required to produce $1 profit in 1927.

[1] Standard Statistics Co., Inc., New York, N. Y.

## Automobile Production

September production (factory sales) of motor vehicles in the United States, as reported to the Department of Commerce, was 413,722 of which 358,872 were passenger cars and 54,850 were trucks, as compared with 461,356 passengers cars and trucks in August and 260,387 in September, 1927.

# The Rubber Industry in Europe

## Great Britain

### Institution of the Rubber Association

Program of papers for session 1928-29, London & District Section, to be read at the Blackfriars Theatre, Lever House, William St., New Bridge St., London, E. C.

Nov. 5. Attachment of Soft Rubber to Metal. Dr. D. M. Newitt.

Nov. 19. Lecture by Dr. T. J. Drakely.

Dec. 10. Joint meeting with the Institution of Automobile Engineers. The Tire as an Article of Manufacture and Usage. W. H. Paull, F. I. R. I.

Jan. 7 Factory Organization in the Rubber Industry Affecting the Conditions of the Worker. F. W. Bennett, F. I. R. I.

Jan. 21. Title to be announced later.

Feb. 4. Short papers night.

China Clay as a Compounding Ingredient in Rubber. W. F. O. Pollett, B. Sc.

Physical Characteristics of Sponge Rubber. H. F. Church, B. Sc.

Mar. 11. Anti-oxidants. Dr. W. J. S. Naunton.

Mar. 18. Lecture by H. C. Young.

Apr. 8. Title to be announced later.

May 6. Short papers night.

Cements and Adhesives. S. D. Sutton.

Properties of Crepe Rubber Soling. T. H. Messenger.

#### Manchester and District Section

To be read in the Hall of the Geographical Society, St. Mary's Parsonage.

Nov. 22. The Quartz Mercury Vapor Arc Lamp. P. G. Nagle.

Dec. 7. Joint meeting with the Manchester Section of the Society of Chemical Industry. Colloid-Chemical Changes in Rubber and Other Unsaturated Organic Compounds. Dr. L. Auer.

Jan. 24. Storage of Steams. E. C. Ritchie.

Feb. 28. Short papers night.

The Distribution of Compounding Ingredients in Rubber Mixings. H. Page.

Mar. 21. Aging of Cotton Contained in Rubber Goods. Dr. Guy Barr.

Some Notes on Ebonite. E. P. Rydings.

Date to be announced later

#### Birmingham and District Section

To be read at the Grand Hotel, Birmingham.

Nov. 8. Short papers night.

Swelling of Vulcanized Rubbers in Liquids. Dr. J. R. Scott.

Dec. 13. Paper by R. W. Lunn.

Jan. 10. An appreciation and Criticism of the Motor Tire. W. W. Hamill.

Feb. 14. Paper by A. B. Hatton

To be read at the Grand Hotel, Leicester.

Mar. 14. Steam Production and Economy in the Rubber Factory. C. B. Williamson.

The particulars of six papers to be arranged for the Scottish Section will be announced later.

### Partridge Heads Goodyear British Unit

A. G. Partridge, manager of the western division for Goodyear Tire & Rubber Co., has been appointed managing director of the Goodyear Co. of Wolverhampton, England, filling the

A. G. Partridge

vacancy caused by the death of C. P. Skinner. Mr. Partridge's connection with Goodyear began in 1926 and in 1927 he was made western manager. Previous to his Goodyear association, he was manager of pneumatic tire sales for The B. F. Goodrich Co. for two years and from 1905 to 1921 was vice president and sales manager of the Firestone Tire & Rubber Co. Before assuming that post he was identified with the Diamond Rubber Co. with offices in New York City.

### No Solid Tires

At the annual meeting of the Leyland Birmingham Rubber Co., Ltd., the fact was mentioned that the company had during the last year made a complete clearance of its solid tire department which for several years past had only losses to book. In spite of the costs involved by this step and expenses and losses in other directions, the trading profit for the year was more than double that of the previous year. All the spreading plant and machinery connected with the manufacture of solid tires have been transferred to a very large space lately occupied by the mixing and calendering plant, etc., so that the company now has one of the finest spreading shops in the trade. Another very large empty department has become available by the closing down of the solid tire department, and this has been equipped for the production of rubber tiling and flooring. A new press that has been installed is capable of producing two tons of rubber tiling daily.

The above company has also recently acquired a substantial control of shares in the South African Rubber Mfg. Co., Ltd.

### Somerville in England

Dr. A. A. Somerville of the R. T. Vanderbilt Co., while on a brief visit to Europe, read a paper on "The effect of Temperature on the Stress-Strain Properties of Vulcanized Rubber" at a meeting of the London & District Section of the Institution of the Rubber Industry, held at the Blackfriars Theatre, London, on Oct. 1, 1928. On Oct. 11 he read the same paper before a meeting of the Birmingham & District Section.

On Sept. 28, he spoke at a gathering held at the Engineers Club, in Paris, when there were about fifty rubber men present, and on Oct. 4, again, this time at a lecture evening held at the Curio Haus in Hamburg. About sixty members of the Deutsche Kautschuk-Gesellschaft, from different parts of Germany, were among those present when Dr. Somerville told about the laboratory work done during the past year.

In order to cover all his engagements in the brief time at his disposal, he made the longer jumps by airplane, and left Paris on Oct. 24 in order to be back in America in time for the Presidential election.

### Insulated Wire and Cable Developments

In accordance with the legislation passed by Parliament in 1926, reorganization of the electricity supply is progressing rapidly. England was one of the last countries as regards electrical development, but it is hoped that before long and with the realization of the national scheme, it will be among the foremost nations in this respect. Already the number of electrical units sold is about double that of 1922. Only recently, the Central Electricity Board placed orders amounting to £1,000,000 with the General Electric and the Callender's Cable & Construction Co. The total value of the orders placed so far is £3,000,000, and that is only a small percentage of the money which will be expended before the great national scheme has been worked up to.

The prospects of manufacturers of cables and electrical supplies are therefore exceedingly bright. Cable manufacturers are already fully occupied with home orders, and before long it is thought possible they may have more orders than they can cope with. This, of course refers to home demand. Orders from abroad for British cables last year was only 20 per

cent of the total turnover, and at that British manufacturers have a hard time against competition from America and Belgium. For British made cables are between 25 and 30 per cent dearer than those of the chief competitors, although it is claimed that they are at least 50 per cent better. Yet it is recognized that it is desirable to bring down prices nearer the level of competitors' prices. It is hoped that the increased production to fill home requirements will help manufacturers to decrease overhead and enable them to quote better figures in the foreign markets.

It is announced that the Pirelli General Cable Works, Ltd., has also secured important contracts. One contract amounting to £171,000 is for super-tension cable for the transmission of electric power for the city of Sydney, Australia. A second contract, to a value of £70,000, is for the British Post Office, for a long-distance telephone cable to be laid between London and Maidenhead. The work on both contracts will commence immediately.

## Tire Price Cuts

It is expected that British tire manufacturers will announce a reduction in the price of tires shortly. The Michelin Tire Co., Ltd., has already sent out its new price list (effective Sept. 27), replacing the old price list of Nov. 7, 1927.

A comparative list of the old and new prices of some of the more popular Michelin sizes follows:

| | New Price | Old Price |
|---|---|---|
| 26 by 3.50 straight side. | £1 8 0 | £1 11 0 |
| 27 by 4.40 straight side. | 2 2 0 | 2 5 0 |
| 28 by 4.95 straight side. | 2 11 0 | 2 15 0 |
| 820 by 120 beaded edge.. | 3 14 0 | 4 9 0 |
| 30 by 3½ beaded edge.. | 2 2 0 | 2 10 0 |
| 32 by 4½ straight side.. | 4 8 0 | 5 3 0 |

## Tire Repair Association

Preliminary steps have been taken toward the formation of a society of retreaders and repairers of rubber to be known as the National Association of Tyre Re-rubberers & Repairers. It has been estimated that there are 250 firms in the United Kingdom engaged in this kind of business and for some time past it has been felt that there was a need for a type of organization leading to trade consciousness and the improvement of trade conditions. So far an organizing committee has been appointed. It is understood that the association intends to set up a high standard of workmanship for its members. Prices will be fixed, a technical committee will be formed to assist members, and a combined advertising campaign is also on the program. It is also proposed that members should brand their work.

## Malayan Rubber Stocks

The recent monthly census of rubber stocks in all of Malaya shows the following quantities held in the Federated Malay States:

| | June 30 Tons | July 31 Tons |
|---|---|---|
| Estates over 100 acres..... | 28,290 | 33,970 |
| Dealers ..... | 10,371 | 7,740 |
| | 38,661 | 41,710 |

# *Germany*

## Leipzig Fall Fair

The Leipzig Fall Fair was not particularly successful this year, and the fall fairs as a rule are never as well attended as the spring fairs, but this time both the number of visitors and of exhibitors was much below normal and business naturally suffered accordingly. Even in those lines which attracted buyers there was no unusual activity. This condition was also felt in the rubber division section. There were conspicuously few foreign buyers and the propaganda for rubber that had been inaugurated in the spring with the aid of the Rubber Growers' Association which helped to make the spring fair a success, was absent. It may here be mentioned that this propaganda will be continued at the next spring fair. The Rubber Growers' Association will again participate and so far The National Association of the German Rubber Industry has received promises from 25 manufacturers to cooperate, and it is probable that more may join later on.

In spite of the inactivity mentioned above certain lines of rubber goods met with some favor. Toys are always favorites; the attractive advance collections of bathing caps drew several good orders and bathing shoes also found a fair sale. Rubber clothing and aprons were most in demand, and certainly the variety of designs and qualities of rubber aprons merited the attention they received. There were plain heavy weight aprons for kitchen duty and colorful well cut models that might grace a living room. One model in particular caught the eye with its smartly turned down collar, groups of pleats in front and novelty belt. Surgical goods also did fairly well, but business in mechanical goods was almost at a stand still. Judging from the number of manufacturers and buyers who stayed away from the fall fair, one concludes that there seems to be a growing feeling that this fair is really unnecessary.

## Rubber Congress

The Deutsche Kautschuk Gesellschaft, the society of German rubber chemists and engineers, held its second general meeting on Sept. 14 and 15 at Hamburg when a number of important papers dealing with various scientific problems relating to rubber were read and discussed.

Among those present were Dr. von Rossem, of the Netherlands National Rubber Institute at Delft, who read a paper on The Freezing of Rubber, and Dr. Katzof, the University of Amsterdam, who dealt with the freezing of rubber from a Roentgenspectographic point of view.

Dr. R. Apt, treated The American Practice of Manufacture of Rubber Insulated Wires.

Dr. Fromandi's paper dealt with the Isomerization of Rubber to Cyclo-Rubber under the Influence of High Tension Alternating Current.

Absorption of Vapors from Liquids by Rubber, was the subject of Dr. Reiner's paper.

Dr. Kirchhof spoke on Color Reactions of Rubber and Gutta Percha, and Crystallized Gutta Percha.

Dr. Ban's subject was Manufacture of Reclaim.

Dr. Heinrich Loewen spoke on The Solubility of Sulphur in Rubber.

Dr. Werner Esch stated some problems in the factors in the appraisal of rubber vulcanizates.

Prof. Dr. Kindscher dealt with the problems of slippery streets and Lothar Hock made a brief communication on the photometric determination of the blacks in soots.

The membership of the society, which was 215 last year, had increased to 368 by August of the current year. The next convention will be held in Hannover, it is planned, and in 1930, it has been proposed to meet in Cologne.

## Professor Fritz Frank

On Sept. 27, Prof. Fritz Frank, Berlin, well known German scientist and technologist, celebrated his 60th birthday. The eminent scientist was born in Klotze, Altmark, and after leaving school followed the example of his famous uncle, Adolph Frank, and became apprentice to an apothecary. He soon definitely took up chemistry and after completing his research work for his doctorate under Emil Fischer, obtained, upon the latter's recommendation, a position with the A. G. fur Teer und Erdolindustrie K (now Rutgers Werke). Some years later he happened to meet Dr. Eduard Marckwald, who had taken over the laboratory of the late Dr. Henriques, and became associated with him. Now began a period of fruitful labor in the field of rubber research and the two partners soon found recognition at the hands of the government, thus when the Central Rubber Bureau was founded, they were put in charge.

The outbreak of the war caused Dr. Frank to turn from rubber to oil and motor fuels. He founded the Research Association for Lignite and Petroleum, and when he was appointed Honorary Professor in Ordinary at the Technical Academy at Charlottenburg, the institute he had founded came under his control.

Always a tireless worker, Dr. Frank has written extensively on the problems that he has investigated, and many of his writings on rubber have appeared in German and other periodicals.

It will interest Americans to know that Dr. Frank has been invited to participate in the Second International Coal Congress, to be held at Pittsburgh in November.

THE IMPROVEMENT OF GERMAN TIRES and the price increase of American tires during the past year has detracted somewhat from the popularity of the American product.

# The Rubber Industry in the Far East

## Malaya

### Rubber Shipments

There is much speculation as to the amount of rubber to be exported from Malaya during November and December. Judging from reservations made with steamship companies, it is thought that gross exports for November-December may be 60,000 tons per month. There are many who believe that railroad and steamship facilities will prove inadequate and that there will be congestion. However, it remains to be seen whether there will be such heavy unloading of rubber during November and December as is expected. The low price for rubber has led up to all sorts of economies and the favorite one will be that of tapping to capacity to cut down costs. Estates have been successful as far as that is concerned and all-in-costs have been coming down for some time.

It is estimated that 40 per cent of the estates in British Malaya can produce with some profit at present prices, 40 per cent can just break even, and that the remaining 20 per cent will be heavy losers. From this optimists like to argue that there will automatically be a 20 per cent shake out. But past experience has taught that very often it is a poor estate which taps to extremes so there need be no fear that 20 per cent of the rubber producers in Malaya will suddenly cease producing. Eventually the poorer estates which cannot show good yields and have not adopted modern methods of planting, will be forced out, but the process is likely to be a long one.

### Rubber Stocks

The following is the statement of Singapore and Penang dealers' stocks at the end of August, 1928:

| | Gross Weight | | |
|---|---|---|---|
| | Smoked Sheet Tons | Unsmoked Sheet Crepe | |
| | | Tons | Tons |
| Singapore ..... | 4,334 | 2,512 | 8,274 |
| Penang ..... | 1,656 | 180 | 796 |

| | Lump Tons | Scrap Tons | Estimated Dry Weight Total Tons |
|---|---|---|---|
| Singapore ..... | 25 | 1,709 | 16,286 |
| Penang ..... | .. | 101 | 2,685 |

### Tires in Malaya

The well known Chinese firm, Tan Kah Kee & Co., has started a drive to popularize its tires. These are offered at about 2/3 of those quoted by the American distributers, and in addition a 10-month guarantee goes with each tire. This concern not long ago produced only 10 tires a day which were used up chiefly by Tan Kah Kee's fleet of motor vehicles.

The new sales campaign is causing some concern here because it seems the country dealers have been able to compete successfully with American tires, particularly in Klang, where the dealer guarantees the tires for 8,000 miles.

On the other hand, it is thought that the Chinese tires will not develop into serious competitors. The prices, it appears, represent the cost of production plus a fair profit, which it is thought means that the value is only two-thirds that of the American tires, the inference being that the cost of production is kept low by using inferior materials and methods. The Chinese tire may not be as good as American tires, but certainly Tan Kah Kee has many advantages in his favor that should enable him to produce a good tire cheaply. He has his own rubber estates, cheap labor at his disposal, no extra costs of freight and of maintaining special offices.

## Ceylon

The Director of Agriculture, Ceylon, F. A. Stockdale, states in his report covering agricultural conditions in 1927 that interest in the selection of high yielding strains of rubber continues and yield records have been taken of trees owned by the Department of Agriculture and on a fair number of estates. Some estates have combined in a program of investigation and experiments and are establishing bud wood nurseries and clones of budded trees from high yielding mother trees. Plans have been made to test known mother trees and to establish isolated seed gardens and now that in Ceylon, budding is regarded as a Rubber Restriction Fund, it will be possible to carry out these plans. It seems that in Ceylon, budding is regarded as a ready vegetative means of isolating high-yielding trees and establishing seed gardens from which selected seed can be secured, for greater commercial success is expected from seed selection than from the establishment of areas of budded plants. The following figures obtained from the Experiment Station, Peradeniya, demonstrates the value of selected seed.

Yields Henaratgoda No. 2. Tree Progeny
1923—446 pounds per acre (trees ten years old).
1924—653 pounds per acre.
1925—662 pounds per acre.
1926—559 pounds per acre (new panel).

Yield Unselected Trees About Same Age
1923—316 pounds per acre (trees ten years old).
1924—449 pounds per acre.
1925—469 pounds per acre.
1926—417 pounds per acre (new panel).

Up to the present there has been no budded rubber available for full tapping in Ceylon, although certain areas will be ready in 1928 or 1929, and the commercial possibilities of such rubber can then be put to the test. There was a keen demand for rubber seed from trees on the Experiment Station and Gardens of the department. The same policy of separate collection from high yielding trees was adopted as in the previous year. During the year, 84,000 seeds from high yielders were supplied, 147,000 seed from the progeny of No. 2 tree Henaratgoda, and 918,000 unselected seeds, making in all 1,149,000 seeds.

In addition a number of seeds from special trees was selected for sowing in the nurseries of the department and on the Experimental Station of the Rubber Research Scheme.

### An Old Story

The *Ceylon Observer* publishes a story regarding the alleged doings of the Dutch, a story which is being circulated in the East. It seems that rubber producers have been astonished at the frankness of the Dutch concerning research work in connection with bud grafting and seed selection, and the question has been asked, why are the Dutch so anxious to give away such valuable secrets to their rivals? At the same time it is known that the British have been buying up vast areas of rubber in bearing in Java and Sumatra. With the money obtained from the sale of these mature areas the Dutch have been buying up fresh rubber areas in Sumatra which have been planted almost exclusively with selected seed or budded rubber. And now comes the question, where does this bud wood and selected seed come from. They come from the giant black heveas which are capable of yielding 10 pounds of rubber per tree per annum. For confirmation of this the reader is referred to C. E. Akers, who in his reports on the Amazon rubber industry has repeatedly mentioned that "it is curious to note that the rubber planted in the Orient, with the exception of 200 trees at Pasir Oeting, Java, is all from seed of the so called white variety of Amazon rubber." The 200 trees at Pasir Oeting, Java, are from the black variety. This rubber grows along the upper reaches of the Amazon above the Tapajos, where Sir Henry Wickham collected his seed, but the seed that he collected, it is said, was from the second best Amazon rubber, the white hevea. And it was a Frenchman who smuggled out of the country the black rubber seed that produced the 200 trees at Pasir Oeting, Java. According to Mr. Akers, many trees along the Madeira and Purus Rivers, where the black hevea predominates, have enormous girths, 150 inches at three feet above the ground being common, while one giant measured 199 inches in circumference. He also mentioned an area on the Madeira where there were 200,000 trees which with proper tapping would yield 10 pounds per tree per annum.

Now it is claimed that the Dutch are anxious to unload their estates planted with white rubber so that they may open up new areas in Sumatra planted with the black hevea, which is superior in the quality and quantity of its product.

# *Netherlands East Indies*

## Budded Areas

In considering the future position of rubber, it is of importance to know what percentage of the newly planted areas are wholly or in part devoted to buddings, as the output from these budded areas is naturally expected to be very much higher than from those planted with ordinary material. As is known, budded plantations in some cases promise a yield double that to be obtained from old plantations. These high yields cannot but have an effect on the total output on the one hand and on the cost price on the other. It is therefore particularly to be commended that the A. V. R. O. S. (General Rubber Association for East Coast Sumatra) has compiled and published a table showing the areas planted with buddings only, those planted with buddings and seedlings, and those planted with seedlings alone, in relation to the young and old plantations. The table, which follows, gives this data for the East Coast of Sumatra, Atjeh and Tapanoeli:

| | Total Planted Area Hectares | Total New Areas Hectares | Extension Buddings Hectares | Extension Buddings and Seedlings Mixed Hectares | Selected Seedlings Hectares | Pure and Mixed Budded Areas in % of Total Planted Area |
|---|---|---|---|---|---|---|
| 1920 ..... | 165,925 | 14,231 | 518 | 954 | 4,914 | 0.9 |
| 1921 ..... | 170,498 | 4,573 | 941 | 210 | 2,653 | 1.5 |
| 1922 ..... | 175,628 | 5,130 | 421 | 1,214 | 1,851 | 2.4 |
| 1923 ..... | 179,471 | 3,843 | 463 | 1,994 | 1,692 | 3.7 |
| 1924 ..... | 188,372 | 8,901 | 1,032 | 2,390 | 1,686 | 5.4 |
| 1925 ..... | 196,624 | 8,252 | 540 | 4,535 | 693 | 7.7 |
| 1926 ..... | 210,297 | 13,673 | 3,459 | 6,573 | 2,828 | 12.0 |
| 1927 ..... | 226,500 | 16,203 | 3,903 | 1,538 | 3,626 | 16.0 |
| Totals ..... | ..... | 74,806 | 11,277 | 26,408 | 19,943 | 50% of the extension |

As the table shows there has been a steady increase in the area devoted to pure and mixed budded plantings. Again, 50 per cent of the younger plantings consist of buddings either mixed with seedlings or alone, the seedlings, it should be remembered, for the most part include very much superior material than was available formerly, so that all in all the yields from the new extensions will be considerably higher than from the older plots.

It seems safe to expect an increase of 60 to 70 per cent in yield from the areas planted since 1920, that is from almost 75,000 hectares out of a total 226,500 hectares. In addition, it may be assumed that renovation of old plantations has been made with selected or budded material. These figures should begin to make themselves felt by 1930.

It is expected that at first all this rejuvenation and planting up with superior material will give the European planter the advantage over the native. But the question is, for how long. For it must not be forgotten that the Dutch Government is encouraging the natives not only to improve their tapping methods, but also to use better material for planting, and it seems that the natives have been following government advice and are making progress. Of course, the European has the advantage of having started so much earlier and of possessing so much more knowledge, but in the long run it is thought that the difference will become less marked.

## Rubber Diseases

A communication from the A. V. R. O. S. states that during 1927 white root mold in the older plantations again was cause of anxiety. Wherever the infection was found it was noted that the disease was spread throughout the entire plantation so that the only efficient method of dealing with the trouble was to expose the roots and treat them every other year or every two years. However, shortage of labor, and often enough the excessive cost of labor for the purpose, prevents the treatment from being carried out properly if at all. Besides this there are estates where it is questionable whether it would be worth while going to the trouble and expense of carrying out the cure. Costs could be considerably reduced by treating or examining only those trees that still give good yields. A solution for the disease seems to be that the open spaces caused by cutting out badly infected trees could be planted up with superior material, after the soil has been properly cultivated.

The disease was not serious in the younger gardens. As a rule the younger areas were started much cleaner than the older ones, and this is why there is less trouble from the disease there.

From Central Java comes the report that during 1927 mildew was not only more serious but also more widespread. However, the plantations recovered sufficiently after the attacks.

## Clone Tjirandji 1

Some interesting data is given regarding this clone in a communication from the experiment station at Buitenzorg, Java.

This clone belongs to one of ten groups selected from among the individual buddings planted on Tjirandji Estate in 1920. These selected groups were all good producers but among them all Tjirandji 1 was conspicuous for the unusually high yields of the five trees it comprised. The trees of all these groups were tapped over 1/3 the circumference, except in the case of two trees from the Tjirandji 1 group which were tapped over ¼ the circumference. From March to May, 1927, the trees were tapped once in four days, but starting from June they were tapped on alternate days. In August they were rested in connection with wintering and in September tapping was carried out lightly so as not to tax the trees too much during the dry period. But from October tapping was carried out in the usual manner, the cut being deep but not so as to cause wounding. The bark consumption per month was 3½ to 4 cm. which may be considered generous for alternate daily tapping.

The output was measured four times a month, and the results showed an average of 83.7 gr. dry weight per tapping for clone Tjirandji 1, which is almost twice as much as that obtained from BD clones that have so far been approved and which are two years older. These figures, it is pointed out, would tend to show that new production standards would have to be set for future clones.

However, further on in the report, we find that of the five trees comprising clone Tjirandji 1, two showed a large growth at the place where the spout had formerly been inserted. It is stated that the spouts used on the estate in question were formerly very wide and heavy and were sometimes put in too far, so that the wound caused by the spout would be unnecessarily deep. Nevertheless, the bark of this clone seems to be more than usually sensitive. In addition, one tree got the brown bast disease which caused a serious reduction of the output. All this seems to point to the fact that the trees are not so robust as they might be, and it is a question whether the gains accruing from large yield might be offset by costs needed to keep the trees in good health. In other words, planters will have to decide whether they care to take these risks or prefer a more robust tree even if the output is not so high.

## N. E. I. Exports

When rubber started on the downward course that has brought it to its present level, the one bright ray was offered by the supposition that native rubber exports would fall owing to native unwillingness to work at the low price. For a time there was indeed a marked drop in outputs from the native holdings, and it was calculated that for this reason production in the Dutch East Indies would work out at around 210,000 to 215,000 tons for 1928.

However, during the last few months native shipments from the Outer Possessions have been not far short of those for the preceding year, and there have been months when the totals were above those for the corresponding periods of the previous year so that estimates have had to be recast and the total figure for 1928, including both estate and native rubber, is now estimated at 245,000 tons, provided rubber does not go lower than 8 pence per pound. This may even be considered a conservative estimate, as official figures give the output from the Netherlands East Indies over the first seven months of the current year as 150,000 tons, which is about 21,420 tons per month over the period when shipments were lower than usual. During August, shipments from the Outer Possessions not including Java were 19,204 tons.

# Rubber Patents, Trade Marks and Designs

## Machinery Patents

### United States

1,683,669. TUBE MAKING APPARATUS. This comprises several endless belt conveyers arranged to produce a tire tube utilizing the maximum elasticity of the calendered rubber. Automatically plied tube sheet strips cut to bring the "grain" transversely to the strips, are passed through calender rolls, applied and jointed around a straight mandrel. A. E. Henderson, Toronto, Can.

1,683,736. AIRBAG STRIPPER. This is constructed to obviate the customary disadvantages of airbag removal from cured tires, providing increased speed and automatic operations. R. W. Snyder, assignor to the Goodyear Tire & Rubber Co., both of Akron, O.

1,683,787. UNWRAPPING TUBES. This machine will unwrap spirally wound material from a tubular member and simultaneously wrap the material upon a spool or reel. The only manual operations necessary being those of connecting the wrapping to a spool and operating a motor for driving the machine. E. F. Maas, assignor to the Goodyear Tire & Rubber Co., both of Akron, O.

1,684,100. MOLDING ARTICLES. This relates particularly to molding rubber articles whether made wholly from ground waste vulcanized scrap, or in part from raw rubber. The pressed sheet of material is cut in the form of mold blanks by compression against a grid placed in a die. The blanks thus formed are molded and vulcanized in the usual way. R. F. Kinsley, assignor to Dryden Rubber Co., both of Chicago, Ill.

1,684,158. RUBBER STRIP CUTTER. This is designed to cut rubber strips into any desired lengths immediately following the calender or tubing operations. The continuous strips may be delivered in an orderly manner into any part of the factory. C. O. Strom and H. M. Nelson, Jr., assignors to Nelson Bros., all of Racine, Wis.

1,684,203. STRAINER HEAD. This invention provides a device for expeditious operation of a tubing machine upon materials of varying characteristics without producing undue strain upon any of the parts or any irregularity in the operation. V. Royle, Paterson, N. J.

1,684,763. TIRE SPLITTING MACHINE. By this invention an automobile tire may be held flat and fed under tension past a knife used for cutting the tread portion of the tire from the duck body. The tire is maintained in endless form during the splitting. W. G. Fritts, Lexington, N. C.

1,685,127. RING-CUTTING MACHINE. This is designed for cutting rings from cylindrical stock, as rubber, rolled tire tape, etc., in which the preparation and mounting of the stock are greatly simplified. The several parts are relatively adjustable for cutting different diameters and thicknesses of rings. Also the speed relation between knife and material is adjustable to different cutting characteristics of the material. G. L. Hammond, L. H. Messinger, Jr., and William Nicholas, assignors to The Black Rock Mfg. Co., all of Bridgeport, Conn.

1,686,436. FORMING CORD MATERIAL. The main feature of this invention is an improved tension equalizing means and a novel form of guiding or spacing device. These simplify the apparatus and render the process capable of more efficient operation. J. W. Clark, Providence, R. I.

1,686,466. BEAD MACHINE. This is an improved machine for progressively applying a strip of rubberized fabric about a strip of bead material in preparation for use in the building of tires. E. D. Putt, assignor to the Firestone Tire & Rubber Co., both of Akron, O.

1,683,774. PRINTING MACHINE. J. I. Haase, assignor to The Goodyear Tire & Rubber Co., both of Akron, O.

1,683,777. DEVICE FOR HANDLING FABRIC. D. E. Hennessy, Akron, O., assignor to The Fisk Rubber Co., Chicopee Falls, Mass.

1,684,769. CONTAINER FOR TESTING DEVICE. L. P. Jackson, El Paso, Tex.

1,685,038. DEVICE FOR INSPECTING TIRES. M. Teich, Peekskill, N. Y.

1,685,325. TIRE DEFLATION SIGNAL. H. R. Hughes, assignor of one fourth to D. R. Frost, one fourth to H. A. Mutch and one fourth to H. J. Papineau, all of Kellogg, Idaho.

1,685,376. TIRE VALVE. W. P. Porter, Greene, Me.

1,686,043. TIRE MAKING MACHINE. W. C. Stevens, assignor to the Firestone Tire & Rubber Co., both of Akron, O.

1,686,089. TIRE PROTECTING SIGNAL. J. E. and M. A. Kennedy, Los Angeles, Calif.

1,686,282. TIRE BUILDING MACHINE. P.W. Lehman, Milwaukee, Wis., assignor to the Fisk Rubber Co., Chicopee Falls, Mass.

1,686,553. TIRE REPAIRING WORK TABLE. E. M. Godfrey, Jr., Knoxville, Tenn.

1,687,321. MARKER FOR CONTINUOUS WEIGHING DEVICES. M. Castricum, Springfield, assignor to the Fisk Rubber Co., Chicopee Falls, both in Mass.

1,687,340. BEVELING AND SEALING CLAMP. T. P. Little, assignor to The Fisk Rubber Co., both of Chicopee Falls, Mass.

1,687,373. TIRE BUILDING MACHINE. P.W. Lehman, Milwaukee, Wis., assignor to The Fisk Rubber Co., Chicopee Falls, Mass.

1,687,465. APPARATUS FOR RESURFACING SOLID TIRES. H. D. Stevens, assignor to The Firestone Tire & Rubber Co., both of Akron, O.

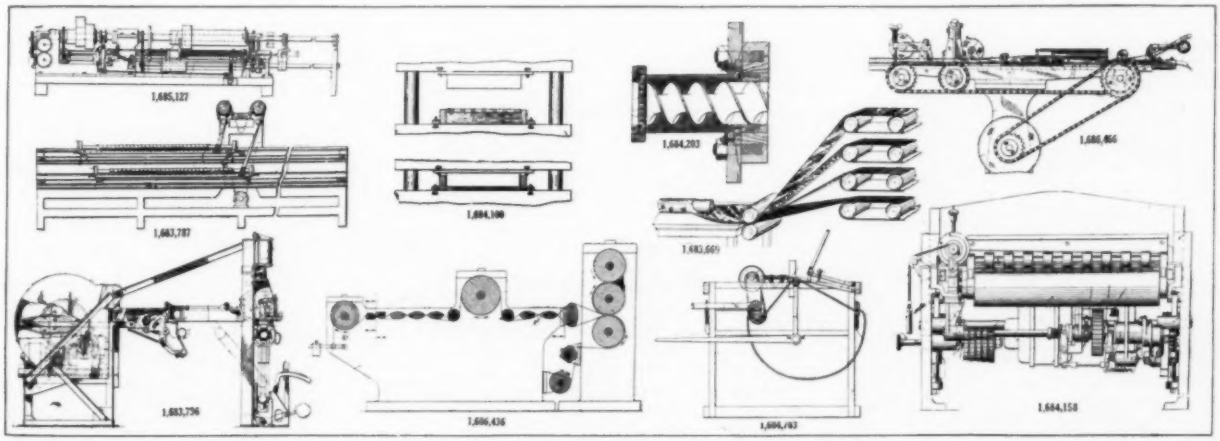
1,687,466. DEVICE FOR TRIMMING RUBBER STRIPS. W. C. Stevens, assignor to The Firestone Tire & Rubber Co., both of Akron, O.

1,687,469. INSTRUMENT PUMP. R. W. Brown, assignor to The Firestone Tire & Rubber Co., both of Akron, O.

### Dominion of Canada

283,232. VULCANIZER. The Akron Standard Mold Co., Akron, assignee of A. J. Fleiter and T. A. Miller, Akron, and H. C. Bostwick, Kenmore, all in Ohio, U. S. A.

283,756. VULCANIZER. The Goodyear Tire & Rubber Co., assignee of R. S. Burdette, both of Akron, O., U. S. A.



# Rubber Patents, Trade Marks and Designs

283,758. Fabric Cutter. The Goodyear Tire & Rubber Co., assignee of H. M. Brown, both of Akron, O., U. S. A.

283,759. Tube Stripping Machine. The Goodyear Tire & Rubber Co., assignee of H. T. Kraft, both of Akron, O., U. S. A.

## United Kingdom

293,684†. Tire Vulcanizer. Gillette Rubber Co., 799 Wisconsin St., assignees of R. W. Hutchens, 1301 State St., and A. R. Krause, 1130 Bellevue Ave., all in Eau Claire, Wis., U. S. A.

294,153†. Impregnating Device. Anode Rubber Co., Ltd., 10 Lefebvre St., St. Peter's Port, Guernsey, assignees of A. Szegvari, c/o University Club, Akron, O., U. S. A.

294,215†. Filter. Anode Rubber Co., Ltd., 10 Lefebvre St., St. Peter's Port, Guernsey, assignees of A. Szegvari, c/o University Club, and C. M. Spencer, 116 Atlas St., both in Akron, O., U. S. A.

294,907. Apparatus for Opening Two-Part Rubber. Dunlop Rubber Co., Ltd., 32 Osnaburgh St., London, H. Willshaw and S. N. Goodhall, Fort Dunlop, Erdington, Birmingham.

294,908. Press. Dunlop Rubber Co., Ltd., 32 Osnaburgh St., London, and H. Willshaw and S. N. Goodhall, Fort Dunlop, Erdington, Birmingham.

295,042†. Press for Splicing Rubber. Firestone Tire & Rubber Co. (1922), Ltd., 216 Tottenham Court Road, London, assignees of G. B. Nichols, 1499 Beardsley St, and R. F. Russell, 74 Morningside Drive, both in Akron, O., U. S. A.

295,175. Machine for Making Hollow Balls. K. Kurokawa, 2097 Sekunshirojimura Shimonoseki, Yamaguchi-ken, Japan.

† Not yet accepted.

## Germany

465,307 Friction Wheel Drive. Berlin Rixdorfer Gummiwarenfabrik Hans Schumann, Mullerstrasse 171a-172 Berlin N. 39, and Roman von Krenski, Sybelstrasse 40, Berlin-Charlottenburg.

465,757 Spreading Machine. Ernst Rohlin, Lutherstrasse 15, Berlin W. 62.

465,786 Hand Roller. Munden-Hildesheimer Gummiwaaren-Fabriken Gebr. Wetzell, A. G., Hildesheim.

466,000 Reclaiming Cycle Tires. Albert Neef and Victor Hardy, Forest-Brussels, Belgium. Represented by B. Kugelmann Berlin S. W. 11.

### Designs

1,041,857 Disk Cutter. Hugo Dietzel, Rotermundstrasse 11, Hannover.

1,041,858 Comb Sawing Machine. Hugo Dietzel, Rotermundstrasse 11, Hannover.

1,041,954 Rubber Thread Cutter. Michael Weyer, Everhardstrasse 11, Cologne-Ehrenfeld.

1,043,273 Electrical Vulcanizer. Carl Kanty, Worms a. Rh.

# Process

## United States

1,685,423. Tennis Balls. L. R. Hurlburt, assignor to Pennsylvania Rubber Co., both of Jeannette, Pa.

1,686,155. Making Tire Bead Reenforcing Elements. A. C. Hopkins, assignor to National Standard Co., both of Niles, Mich.

1,687,301. Making Tires. T. Midgley, Hampden, assignor to The Fisk Rubber Co., Chicopee Falls, both in Mass.

1,687,302. Making Multiple Bead Tire Casings. T. Midgley, Hampden, assignor to The Fisk Rubber Co., Chicopee Falls, both in Mass.

1,687,441. Making Tread Material. J. E. Grosjean, Lima, O.

## Dominion of Canada

283,190. Making Tire Tube. C. S. Moomy, Carlisle, Pa., U. S. A.

283,443. Making Tires. V. C. Anderson, San Francisco, Calif., and S. J. Ross, Seattle, Wash., assignees of half the interest, both in the U. S. A.

## Germany

465,416 Insulated Conduction Wire. Kabelfabrik A. G., Preszburg, Czecho-Slovakia. Represented by E. Herse, Kassel-Wilhelmshohe, and H. Hillecke, Berlin S. W. 61.

465,756 Rubber or Reclaim Drier. Dr. Hans Odenwald, Wunstorferstrasse 130, Hannover-Limmer.

# Chemical Patents

## United States

1,683,862, 1,683,863, 1,683,864. Rubber and Glue Compositions—C. H. Campbell, Pittsburgh, Pa., assignor to American Glue Co., Boston, Mass.

1,685,759. Breather Bag Fabric. A gas tight coating of proteinous matter containing a softening agent is tanned after application to the fabric and then died.—C. M. Carson, assignor to The Goodyear Tire and Rubber Co., both of Akron, O.

1,685,797. — Jelutong Product. Melted coagulated jelutong latex.—S. S. Yates, Englewood, N. J., assignor to Chicle Development Co., New York, N. Y.

1,685,954. Attaching Sponge Rubber. Method of fixing thin sponge rubber to rubber goods.—Sataro Morimoto, Minamikatsushika-Gun, Tokyo-Fu, Japan.

1,687,410. Rubber Bonded Abrasive. A mixture of vulcanizing agents with latex subsequently coagulated and vulcanized.—D. E. Webster, assignor to Norton Co. both of Worcester, Mass.

## Dominion of Canada

283,262. Rubber Articles. The surface of a mold is treated with a layer of jelly including a saline coagulant and the mold dipped into the material forming the article.—The Dunlop Rubber Co. Ltd., London, assignee of D. F. Twiss, Birmingham, Eng.

283,449. Paving Block. A metal sulphide is produced on the under surface of rubber paving or flooring blocks and the sulphide subsequently reduced to metal by electrolytic treatment.—C. D. Rotch, Teddington, Middlesex, and A. I. G. Warren, West Norwood, London, S. E. 27, all in England.

283,464. Vulcanized Rubber. Making vulcanized rubber by mixing sulphur, in dissolved or loosely combined form, with rubber, while both are mobile in a fluid mass.—W. A. Boughton, Cambridge, Mass.

283,709. Regeneration of Rubber.—W. Scheithauer, Naumberg on the Saale, Germany.

283,757. Halide Rubber Product.—The Goodyear Tire & Rubber Co., assignee of H. A. Bruson, both of Akron, O.

## United Kingdom

293,771†. Concentrating Latex. To fresh tapped latex is added one half per cent of potassium salicylate, or one quarter per cent of potassium fluoride and one quarter per cent of potassium hydroxide, then drying the mixture.—K. D. P., Ltd., Finsbury House, Blomfield St., London, assignee of Metallbank und Metallurgische Ges., Frankfort-on-Main, Germany.

293,815. Electrolysis of Rubber.—W. A. Williams, 1, Lennox St., Edinburgh.

294,002. Treating Latex. Rubber Latex is creamed with a salt of alginic acid.—L. Jackson Mellersh, 28 Southampton Bldgs., London, General Rubber Co., New York, N. Y., U. S. A.

294,299. Chewing Preparation. Magnesium oxide or hydroxide or an equivalent magnesium compound is incorporated in chicle or purified rubber so as to act as an acid-neutralizing agent in the mouth.—B. Arkell, 120 Broadway, New York, N. Y., U. S. A.

294,412. Treating Latex. Rubber latex is preserved by the addition of small quantities of soluble salts of sulphonic acids possessing soap-like qualities.—J. Y. Johnson, 47, Lincoln's Inn Fields, London, I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.

294,474†. Polymerized Vinyl Compound. I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.

294,515. Fibrous Compositions. Shreds of paper or woven material are mixed with an excess of a binding medium of rubber, resin or glue-like nature.—F. A. W. Kühne, 9, Klingenbergerstrasse, Dresden, Germany.

294,632†. Preserving Rubber Articles. There is applied to the surface a mixture of French chalk and a gum solution with or without a solution of cellulose.—A. Forner, 6, Gartenstrasse, Plauen, Vogtland, Germany.

294,661†. Synthetic Rubber. The polymerization of hydrocarbons suitable for the production of rubber is carried out in the presence of a metallic salt of an inorganic or organic acid such as salts of cobalt, lead, manganese, chromium, nickel, silver, etc.—I. G. Farbenindustrie A. G. Frankfort-on-Main, Germany.

294,804. Concentrated Latex. A viscous paste which can be readily redispersed by aqueous ammonia, etc., is formed by acidifying the latex to a prescribed degree, and filtering off the serum. Fillers, protective colloids, sulphur, etc., may be added before or after the acid.—J. Y. Johnson, 47, Lincoln's Inn Fields, London, I. G. Farbenindustrie, A. G., Frankfort-on-Main, Germany.

# Rubber Patents, Trade Marks and Designs

294,963†. SYNTHETIC CAOUTCHOUC.—I. G. Farbenindustrie A. G., Frankfort-on-Main, Germany.

295,080. VARIEGATED RUBBER. Different colored rubber solutions dried and agglomerated into a mass upon which is developed a variegated surface.—MacIntosh & Co., Ltd., C. and S. A. Brazier, all of Manchester.

† Not yet accepted.

## General

### United States

#### September 11, 1928*

1,683,691. BELT. W. R. Mulock, Winnipeg, Manitoba, Canada.

1,683,793. SLIDING DOOR BUMPER. J. O. Nyman, assignor to The United Metal Products Co., both of Canton, O.

1,683,910. BALL. W. S. Minnix, Washington, D. C.

1,684,046. BABY PANTS. M. E. Smith, El Reno, Okla.

1,684,156. BRAKE. E. G. Sprung, Detroit, Mich., assignor to The Studebaker Corp., South Bend, Ind.

#### September 18, 1928*

1,684,459. TENSION AND PHYSIOTHERAPY TABLE. O. P. Spilman, Houston, Tex.

1,684,497. COLLAPSIBLE CONDUIT CORE. H. E. Lindas, Colorado Springs, Colo.

1,684,516. CONDUIT COUPLING. F. E. Roach, Chicago, Ill.

1,684,596. RESILIENT WHEEL. H. M. Patch, Seattle, Wash.

1,684,660. SHOE. G. W. Blair, assignor to Mishawaka Rubber & Woolen Mfg. Co., both of Mishawaka, Ind.

1,684,676. BOOT SOLE. L. Lorenzi and A. Colombo, San Francisco, Calif.

1,684,714. SWIMMING DEVICE. I. D. Perry, Chicago, Ill.

1,684,864. TIRE GAGE. H. P. Grohn, Chicago, Ill.

1,684,880. PUMP. A. G. Norton, assignor to Alert Products, Inc., both of Holley, N. Y.

1,684,948. METATARSAL PAD. A. Degling, Philadelphia, Pa.

1,685,013. TIRE. P. Abrechcinski, Buffalo, N. Y.

#### September 25, 1928*

1,685,216. FOOTWEAR. G. P. Dike, Brookline, Mass.

1,685,538. BOOT AND SHOE SOLE. A. A. Glidden and T. M. Knowland, assignors to Hood Rubber Co., all of Watertown, Mass.

1,685,586. HAT PROTECTOR. G. K. Guinzburg, Chappaqua, assignor to I. B. Kleinert Rubber Co., New York, both in N. Y.

1,685,693. BED BIDET. B. Claus, Magdeburg, Germany.

#### October 2, 1928*

1,685,824. ARTIFICIAL LARYNX. E. I. McKesson, assignor to The Vocophone Co., both of Toledo, O.

1,685,900. AIRBAG. K. C. Benn, assignor to The Mohawk Rubber Co., both of Akron, O.

1,685,955. TIRE. M. C. Overman, assignor to Overman Cushion Tire Co., Inc., both of New York, N. Y.

1,685,991. LEGGING. C. A. Erickson, Detroit, Mich.

1,686,098. FLEXIBLE CONDUCTOR. F. Meiwald, Vienna, Austria.

1,686,142. COMPOSITE MOLDED ARTICLE. Le Bonsieur, Elyria, O.

1,686,164. BUFFER. Y. Miyaoka, Spokane, Wis.

1,686,165. TIRE GAGE. R. V. Morse, Ithaca, N. Y.

1,686,185. WELL PLUG. F. J. Spang, assignor to Spang & Co., both of Butler, Pa.

1,686,366. INFLATABLE BOAT. J. F. Boyle, assignor to Airships Inc., both of Hammondsport, N. Y.

1,686,397. HEEL. C. Roberts, Reigate, England.

#### October 9, 1928*

1,686,646. BALLOON. R. H. Upson, Detroit, Mich.

1,686,977. TIRE. Z. Littman, New York, N. Y.

1,686,985. FLUSH TANK VALVE. R. M. Pierson, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.

1,687,057. SPRING SHACKLE. L. P. Christman, assignor to The Inland Mfg. Co., both of Dayton, O.

1,687,113. CASTER. W. A. Stockdale, Zanesville, O.

1,687,206. TIRE. G. Hatvani, Medina, O.

1,687,294. SOLE. W. B. Hopwood, College Point, N. Y., assignor to The Beacon Falls Rubber Shoe Co., Beacon Falls, Conn.

1,687,330. TIRE. E. H. Fitch, Hudson, O., E. M. Fitch, executrix of said E. H. Fitch, deceased, assignor to The B. F. Goodrich Co., New York, N. Y.

### Dominion of Canada

#### September 11, 1928

283,226. MASSAGE APPARATUS. C. J. Wallis, London, England.

283,285. KNIT FABRIC. The Narrow Fabric Co., Inc., Reading, Pa., U. S. A., assignee of T. G. Vorck, Barmen, Rheinland, Prussia, Germany.

#### September 18, 1928

283,337. GARMENT STRAP. L. K. Caplin, Montreal, Quebec.

#### September 25, 1928

283,598. VEHICLE BODY. The Rubwood, Inc., Lawrence, assignee of H. N. Atwood, Monson, both in Mass., U. S. A.

### United Kingdom

#### September 5, 1928

293,674. SLEEVE JOINT. G. N. and Dexine Arthurs, Ltd., Abbey Lane, Stratford, London.

293,679. TIRE. Goodyear Tire & Rubber Co., 1144 East Market St., assignees of C. J. Burkley, 1857 Goodyear Ave., both of Akron, O., U. S. A.

293,704†. SPRING. H. Beckmann, 26 Albertinenstrasse, Zehlendorf, Berlin, Germany.

293,712. SPRING. F. G. G. Armstrong, North Bar St., Beverley, Yorkshire.

293,911. TELEPHONE. H. K. De Lacy, 26 Stirling St., Poulton, Wallasey, Cheshire.

293,965. HORSESHOE. R. A. Ede, 10 Northcote, St., Leamington.

#### September 12, 1928

294,116†. HAT. A. Sarati, Rome, Italy.

294,186 and 294,192. TIRE TUBE. Dunlop Rubber Co., Ltd., 32 Osnaburgh St., London and F. Fellowes, Fort Dunlop, Erdington, Birmingham.

294,273. BALLOON. R. P. McClure, 66 Barassie Terrace, Troon, and J. Simpson, 1 Glendoune St., Girvan, both in Ayrshire.

294,290. TIRE FLAP. Dunlop Rubber Co., Ltd., 32 Osnaburgh St., London and F. Fellowes, Fort Dunlop, Erdington, Birmingham.

294,310. BRACKET. H. R. Rignold, 32 Southdawn Ave., Brighton.

294,424. TANK COVERING. J. Poberejsky, 38 Boulevard de la Saussaye, Neuilly-sur-Seine, France.

#### September 19, 1928

294,657†. RUBBER USED IN THE MANUFACTURE OF ARTIFICIAL SILK. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany.

294,748. BATHING CAP. Macintosh & Co., Ltd., and C. and F. W. Warren, 2 Cambridge St., Manchester.

294,763. MEDICAL AND SURGICAL PAD. M. Hart (née Payne), 405 Franklin Court, Vancouver, Wash., U. S. A.

#### September 26, 1928

294,900.† CRUTCH PAD. J. A. Weis, 3336 Ainslee St., Chicago, Ill., U. S. A.

295,016.† DRIVING BELT. E. De Valenzuela, 1 Calle de General Arrando, Madrid, Spain.

295,057. LOUD SPEAKER. H. N. Wilson, Friarshall, Paisley, Renfrewshire.

295,100. HORSESHOE. S. Collison, 6 Shorey Bank, Burnley.

295,121. ROAD SIGNAL. H. Weinberg, 11 Denmark St., Charing Cross, London.

295,136. SOLE. Gimson Shoe Machinery Co., Ltd., Ulverscroft Works, Ulverscroft Rd., and W. Wardle, 122 Barclay St., both in Leicester.

295,158. TEETH CLEANING APPLIANCES. M. V. Lappalainen, Kuopio, Finland.

295,183. NIPPLE. G. B. McMullen, 1738 Courtland St., Philadelphia, Pa., U. S. A.

† Not yet accepted.

### Germany

465,346. SHAVING BRUSH. Karl Schornstein, Meran, Italy. Represented by J. Bloch, Waldschmiedstrasse 17, Frankfort a. Main.

466,115 TREAD FOR MOTOR VEHICLES. Maschinenfabrik Eszlingen, Eszlingen, Wurttbg.

466,321 BUFFER FOR LEANING STICK. Richard Groll, Damenstiftstrasse 15, Munich.

### Designs

1,041,718. SOLE AND HEEL LINING. Karl Malgut and Karl Levi, Orlandostrasse 1, Munich.

* Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

# Rubber Patents, Trade Marks and Designs

1,041,902 RUBBER SOLED SHOE. Schuhfabrik Confluentia A. G., Moselweisser Weg 133, Coblenz.

1,042,325 TRACTOR TREAD BAND. Continental Caoutchouc und Gutta-Percha-Compagnie, Hannover.

1,042,601 SANDAL. Rosi Leiser, nee Reichmann, Nurnbergerstrasse 16, Berlin W. 50.

1,042,848 RAILWAY BRAKE. Peter Rost, Gummiwarenfabrik, Viktoriastrasse 12, Cologne.

1,043,115 FURNITURE BUFFER. Jakob Matthai, Brakel, Kr. Hoxter.

1,043,418 STOCKING. Firma Franz Anton, Zeulenroda, i. Th.

1,043,450 BRUSH. Friedrich Rimmler, In der Olk 14, Trier.

1,043,583 TOY BALL COVER. Harburger Gummiwaren-Fabrik Phoenix A. G., Harburg-Wilhelmsburg a.d.E.

1,043,858 LETTERED HARD RUBBER. New York-Hamburger Gummiwaren-Compagnie, Hamburg 33.

1,043,938 FOOTWEAR. M. & L. Hess Schuh-Fabrik A. G., Moltkestrasse 60, Erfurt.

1,043,944 RUBBER THREAD INDICATOR. Hugo Muller, Mullertsrasse 34, Elberfeld.

1,044,115 HALF MASK. Deutsche-Gasgluhlicht-Ayergesellschaft, m.b.H., Rotherstrasse 16-19, Berlin O 17.

1,044,341 RUBBER AND FELT SOLE. Freitaler Schuhfabrik Robert Gebauer, Freital-Deuben, b. Dresden.

1,044,501 GARTER. Berg & Nolte A. G., Ludenscheid i. W.

1,044,939 SHAVING CLOTH WITH COLLAR. Alfred Langer-Reuth, Goslar a. H.

1,045,018 INSERT AND COVER. Continental Caoutchouc und Gutta-Percha-Compagnie, Hannover.

## Trade Marks

### United States

#### Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section (1) (b) are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the later act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

**September 11, 1928**

Act of February 20, 1905

246,473 "GLORIOUS GIRL." — shoes of leather, rubber, etc. Chicago Mail Order Co., Chicago, Ill.

246,513 FULL BACK—baby pants. A. Stein & Co., Chicago, Ill.

246,531 Representation of a claw beneath which are the words: "CLINGS LIKE A CLAW"—underlay fabric for rugs. P. T. Stoffel, Racine, Wis.

246,535 PENIMAID—bed and crib sheeting. J. C. Penney Co., Wilmington, Del., and New York, N. Y.

246,582 ALL-AMERICA — footballs. The Draper-Maynard Co., Plymouth, N. H.

246,596 "BOOTIERS TO THE STARS"—shoes and slippers of leather, rubber, etc. Elias-Katz Shoe Factories, Los Angeles, Calif.

246,612 ARCH-TONIK — shoes of leather, rubber, fabric, etc. Devine & Yungel Shoe Mfg. Co., Harrisburg, Pa.

246,613 TIGER—golf balls. United States Rubber Co., New York, N. Y.

246,648 "DELMAN SWAYS THE MODE"—shoes of leather, rubber, etc. Delman, Inc., New York, N. Y.

246,741 Fanciful design containing the word: "HELSINGBORG"—balls and football bladders. Helsingborgs Gummifabriks Aktiebolag, Helsingborg, Sweden.

**September 18, 1928**

Act of February 20, 1905

246,860 VEE CORD—belting. Ferguson Gear Co., Gastonia, N. C.

246,915 MONARCH—heels, soles and taps. Monarch Rubber Heels Co., Inc., Baltimore, Md.

246,976 Representation of a shield—tires, inner tubes and patches. The General Tire & Rubber Co., Akron, O.

246,987 OXITE—metallic oxide for rubber compounding. E. M. & F. Waldo, Inc., Muirkirk, Md.

247,028 PENIMAID—garters. J. C. Penney Co., Wilmington, Del., and New York, N. Y.

**September 25, 1928**

Act of February 20, 1905

247,176 E-RAM-ESE—prophylactic rubber articles for the prevention of contagious diseases. A. G. Vining, Atlanta, Ga.

247,186 Circle containing a fanciful design and the monogram: "F. W. G. Co."—covered rubber thread. F. W. Gorse Co., Needham, Mass.

247,262 SYLVAN—pneumatic tires. Pennsylvania Rubber Co. of America, Jeannette, Pa.

247,266 WOLVERINE—tires and inner tubes. Corduroy Tire Co., Grand Rapids, Mich.

247,337 Fancy design containing the word: "MILLER"—garments and overshoes. The Miller Rubber Co., Akron, O.

247,341 PAROCK—hard rubber bearings. The Manhattan Rubber Mfg. Co., Passaic, N. J.

247,367 Representation of a devil, beneath the representation the words: "RED DEVIL" BOOTS—boots and reliners for pneumatic tires. J. C. Skinner, doing business as Skinner Boot & Reliner Co., Dayton, O.

247,407 Triangle containing the words: "RESISTOX" and "RUBBER SERVICE LABORATORIES"—chemical compounds employed as anti-oxidants in the manufacture of vulcanized rubber articles. The Rubber Service Laboratories Co., Akron, O.

247,408 Triangle containing the words: "OXYNONE" and "RUBBER SERVICE LABORATORIES"—chemical compounds employed as anti-oxidants in the manufacture of vulcanized rubber articles. The Rubber Service Laboratories Co., Akron, O.

247,409 Triangle containing the words: "WAXENE" and "RUBBER SERVICE LABORATORIES"—compound used as a vulcanization accelerator in the curing of rubber articles. The Rubber Service Laboratories Co., Akron, O.

247,427 Representation of a moose head and the words: "MOOSE BRAND"—golf balls, etc. Brauer Bros., Inc., St. Louis, Mo.

247,467 Circle containing the words: "REACH" "THE SIGN OF QUALITY"—athletic, wrist and ankle supporters and bandages. A. J. Reach Co., Philadelphia, Pa.

247,496 Oval containing the word: "TRUSTY"—golf balls. Bon-Dee Golf Ball Co., Detroit, Mich.

247,497 Oval containing the word: "THRILL"—golf balls. Bon-Dee Golf Ball Co., Detroit, Mich.

247,498 BON-DEE — golf balls. Bon-Dee Golf Ball Co., Detroit, Mich.

**October 2, 1928**

Act of February 20, 1905

247,541 "GEMCO"—garters, arm bands and suspenders. Gem-Dandy Garter Co., Madison, N. C.

247,555 Medal containing the words: "THE BEST," "WARRANTED" and "KLEINERT;" beneath the representation the words: "THE GEM"—dress shields. I. B. Kleinert Rubber Co., New York, N.Y.

247,557 Representation of a woman's figure—garters. J. C. Penney Co., Wilmington, Del., and New York, N. Y.

247,662 MARINE—tires and tubes. Southern Tire & Rubber Co., Augusta, Ga.

247,676 Design containing the word: "SUPER"—hose. N. L. Kuehn, doing business as N. L. Kuehn Co., Milwaukee, Wis.

247,742 HYCOE—belts, hose and packing. The Manhattan Rubber Mfg. Co., Passaic, N. J.

Act of March 19, 1920

247,808 SPORTBALL—inflatable rubber balls. W. J. Voit, doing business as W. J. Voit Rubber Co., Los Angeles, Calif.

247,812 RIB CORD—conducting hose. The B. F. Goodrich Rubber Co., New York, N. Y.

**October 9, 1928**

Act of February 20, 1905

247,816 HY-POWER—golf balls, tees, bags, etc. The Kroydon Co., Hilton, N. J.

247,823 Fancy circle containing the monogram: "F.W.G.Co."—abdominal supports, elastic stockings, belts and bandages, E. W. Gorse Co., Needham, Mass.

247,838 TUFFEE—golf balls. Carson Pirie Scott & Co., Chicago, Ill.

247,841 RAMSES—prophylactic rubber articles for the prevention of contagious diseases. L. Hilsenbeck, Inc., New York, N. Y.

247,868 INVISA—elastic stockings. The W. M. Eisen Co., Inc., New York, N. Y.

# Rubber Patents, Trade Marks and Designs

247,885 Fancy design and the words: "HYGIENE BRAND," "S H P," "SANITARY PROTECTORS" and "HYGIENIC"—prophylactic rubber articles for prevention of contagious diseases. A. G. Vining, Atlanta, Ga.

247,987 XETAL—belting, packing, tires and piping. Safety Glass & Xetal Products, Ltd., Stapleford, England.

## Dominion of Canada

### September 11, 1928

44,546 Capital letter: "H" in red, contained within a black diamond shaped figure having a middle portion forming the background for the said letter and having the general appearance of the letter: "H" in capital form; the slogan "EQUALS WORLD'S BEST QUALITY" appears on said geometrical figure, one word thereof on each side of the said figure—rubber and gutta percha goods. Hannon Tire & Rubber Co., Ltd., Toronto, Ont.

### September 25, 1928

44,649. "RUG-STAR"—rubber goods. Cambridge Rubber Co., Cambridge, Mass., U. S. A.

44,651 "HERCULEX"—footwear. Columbus Rubber Co. of Montreal, Ltd., Montreal, Que.

44,652 "STYLO"—footwear. Dominion Rubber Co., Ltd., Montreal, Que.

### October 2, 1928

44,672 Diamond device upon which is superimposed the letter: "G" and across which is a band upon which is the hyphenated word: "DE-LUXE"—tires and tubes. Gregory Tire & Rubber, 1926, Ltd., Port Coquitlam, British Columbia.

## United Kingdom

### September 5, 1928

489,691 CLIFTEX—electrical insulating materials, tape, tubes, sheets, etc. Mosses & Mitchell, Ltd., 122-124, Golden Lane, London, E. C. 1.

492,986 Representation of a hare and the words: "HARE FOOT" and "MADE IN ENGLAND"—all goods included in class 40. I. T. S. Rubber Co., Ltd., Sandringham Rd., Petersfield, Hampshire.

### September 12, 1928

490,166 ELASTO—braces, belts and hose suspenders. Harry Frank, 25-27, Chiswell St., London, E. C. 1.

490,677 PARACORD—soles and heels for boots and shoes, Endicott Johnson Corp., Endicott, N. Y., U. S. A.

493,056 Fancy representation on which appears the word; "SPHERE"; beneath the representation the words: "VISCOUNT SPHERE"—suspenders, braces, garters, etc. Faire Bros. & Co., Ltd. 2, Southampton St. and St. George's Mills, Leicester.

493,292 FIRMITAS—elastic webs, cords and braids. Archibald Turner & Co., Ltd., 7, Jewin St., London, E. C. 1.

### September 26, 1928

488,714 Triangle containing the words: "TACKOL" and "RUBBER SERVICE LABORATORIES"—vegetable resin and oil compounds. The Rubber Service Laboratories Co., Akron, O., U. S. A.

493,194 Design containing the representation of a man and the words: "TRADE MARK," and "BRIAZON WEATHERPROOFS"—raincoats. Isaac Goldberg, 5-6, Davis Mansions, Goulston St., Aldgate, London, E. 1, England.

494,507 VERA — elastic sandalling, webs, cords and laces, Jones, Stroud & Co., Ltd., Austin's Factory, Market Place, Long Eaton, Derbyshire.

# Labels

## United States

34,608 EASTWOOD. Shoes, W. Eastwood & Son Co., Rochester, N. Y. published June 7, 1928.

34,751 SPEEDWAY PATCH. Tube patch kits. W. R. Landsberg, doing business as W. R. Landsberg Rubber Co., Waukesha, Wis. Published July 21, 1928.

# Designs

## United States

76,413 HOT WATER BOTTLE OR SIMILAR ARTICLE. Term, 7 years. S. L. Palmer, Teaneck, N. J.

76,419 TIRE. Term 14 years. I. J. Remark, assignor to the General Tire & Rubber Co., both of Akron, O.

76,478 TIRE. Term 14 years. L. W. Heefner, Greensburg, assignor to Pennsylvania Rubber Co., Jeanette, both in Pa.

76,541 COMBINED SOLE AND HEEL. Term 14 years. W. B. Hopwood, assignor to to The Beacon Falls Rubber Shoe Co., both of Beacon Falls, Conn.

## H. S. Firestone, Sr., Opens British Factory by Radio

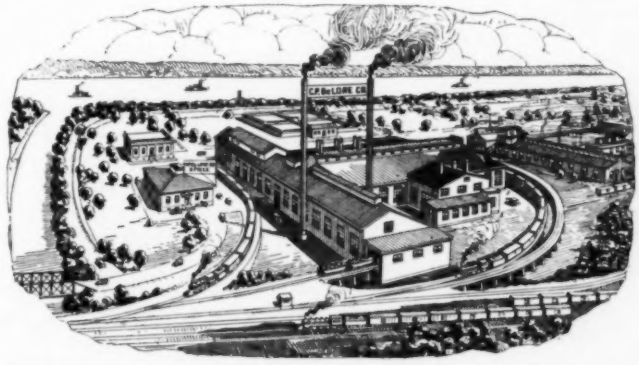
*Harvey S. Firestone Sr., speaking from Akron, O., delivered the leading speech at a luncheon held Oct. 15, in Brentford, a suburb of London, to mark the opening of the new English factory of the Firestone Tire & Rubber Co. Mr. Firestone told his unseen guests that the new factory in England would cement still further the friendly relations between the English-speaking peoples.*

*Among the guests was Sir William Joynson-Hicks, the Home Secretary, who was pleased to hear a voice from across the ocean say:*

*"To Sir William, I express my gratitude. He is the member of the British Government who above all others has the interest of the motor industry at heart."*

*Harvey S. Firestone, Jr., presided at the luncheon and introduced his father for the speech from 3,000 miles away.*

## Barytes Plant of C. P. DeLore Co., St. Louis, Mo.



*THE above is a cut of the present barytes plant of the C. P. DeLore Co., located adjacent to Missouri Pacific Railroad distributing yards at St. Louis, Mo. The Mississippi River can be seen in the distance and to the left the River Des Peres. Mr. DeLore has had twenty-two years' experience as an operator of barytes plants and baryta ore fields and D. W. Brigham, his superintendent, has had twenty years of similar experience. This is the third water-ground barytes plant built and operated by them, they having previously built and operated the two water-ground barytes plants of the J. C. Finck Mineral Milling Co.*

# Legal

## Adjudicated Patents

WHEEL. (D. C. Mich.) The Putnam patent, No. 1,537,879, for pneumatic treaded vehicle wheel, claims 1 and 2 Held invalid. Steel Wheel Corp. v. B. F. Goodrich Rubber Co., 27 F. (2d) 427. *Official Gazette*, Vol. 375, No. 1, p. 1.

## Drawback

DENTAL RUBBER. Manufactured by the E. J. McCormick Rubber Co., Inc., Passaic, N. J., with the use of imported vermilion reds containing quicksilver. The drawback allowance shall not exceed the duty paid, less 1 per cent thereof, on the quantity of imported vermilion used in the manufacture of the exported dental rubber. *Treasury Decisions*, Vol. 54, p. 6.

## Patent Suits

TIRES. No. 1,162,479. A. H. Harris, method of manufacturing tires; No. 1,374,505, E. Hopkinson, method of making motor-vehicle tires; No. 1,480,719, J. R. Gammeter, method and apparatus for making or manipulating tires; No. 1,507,563, A. O. Abbott, Jr., method and apparatus for manufacturing tire casings, filed June 25, 1928, D. C., N. D. Ohio, E. Div., Doc. 2607, U. S. Rubber Co. et al. v. The Firestone Tire & Rubber Co. *Official Gazette*, Vol. 374, p. 253.

TIRE CASINGS. No. 1,570,298. A. H. Fisher, method and means for repairing tire casings, D. C. Nebr. (Omaha), Doc. E 841, Kex Co., Inc., v. H. M. Watson (The Star Sales Co.). Claims 2, 3, and 4 infringed July 28, 1928. *Official Gazette*, Vol. 375, p. 211.

## Customs Appraisal

RAINCOATS. No. 6765. Protest 262501-G of Meier & Frank Co. (Portland, Ore.) Raincoats—Cotton Wearing Apparel.—Cotton goods lined with rubber, classified as cotton wearing apparel at 35 per cent ad valorem under paragraph 919, tariff act of 1922, are claimed dutiable as manufactures in chief value of rubber at 25 per cent under paragraph 1439. Opinion by J. Weller. A sample was analyzed and found to contain 82.88 per cent cotton and 17.12 per cent rubber. The claim under paragraph 1439 was therefore overruled. *Treasury Decisions*, Vol. 54, No. 14, p. 32.

## Standardizing Tests for Rubber Goods

Mechanical rubber goods have been used in increasing quantities in the automotive industry during the last three or four years for bumpers, engine supports, spring shackles, torque insulators and universal joints to absorb vibration and shock and to increase the quietness and easy-riding qualities of motor-vehicles. With this increased use, the need has developed for suitable methods of testing mechanical rubber parts, says the October issue of the *S.A.E. Journal*.

Early in 1926 the society investigated the desirability of establishing standards for such tests and decided to undertake the work in cooperation with the American Society for Testing Materials. As a result of the work that has been done, a definition of hardness of rubber parts has been set up to be recommended as a standard, and a group of the joint subcommittee of the societies is now engaged in testing two hardness testing machines that have been submitted. Another group is making a survey of the compression and permanent-set tests now used by the rubber and automotive industries. It is intended that this survey shall serve as the basis for the development of standard tests for compression and permanent set.

The subcommittee is receiving splendid cooperation from the industries to which this work naturally relates and anticipates being able to report definite recommendations in the near future.

## Softener P. A. I.

A softening material of French origin and manufacture known as "Agglomerant Ideal P. A. I., has recently been introduced for the efficient plasticizing of waste rubber. It is particularly effective in small doses as compared with other softeners.

# Rubber Trade Inquiries

*The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.*

| NUMBER | INQUIRY |
|---|---|
| 1159 | Manufacturers of rubber dummies for theatrical use. |
| 1160 | Maker of Velsco nursery chair pads. |
| 1161 | Manufacturer of Are-O-Sol. |
| 1162 | Source of supply for stearine pitch. |
| 1163 | Rubber practice golf ball. |
| 1164 | Molds for rubber bulbs, nipples, balls, etc. |
| 1165 | Manufacturers of flexible couplings. |
| 1166 | Dipping and aging machines. |
| 1167 | Fancy and household aprons. |
| 1168 | Manufacturers of machines which insert washers in rubber heel molds. |
| 1169 | Power scraper for cleaning press platens. |
| 1170 | Manufacturer of rubber labels. |

# Foreign Trade Information

*For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.*

| NUMBER | COMMODITY | CITY AND COUNTRY | PURCHASE OR AGENCY |
|---|---|---|---|
| 33,437 | Fan belts | Milan, Italy | Agency |
| 33,438 | Hot water bags, toys, novelties and shoes | Concepcion, Chile | Agency |
| 33,443 | Toilet goods | Prague, Czechoslovakia | Either |
| 33,533 | Carnival goods | Pt. Elizabeth, S. Africa | Both |
| 33,620 | Tires | Guatemala City, Guatemala | Both |
| 33,621 | Bathing shoes and boots | Lima, Peru | Both |
| 33,622 | Tires | Lagos, Nigeria | Both |
| 33,624 | Heels | Dresden, Germany | Agency |
| 33,627 | Soles | Frankfort, Germany | Agency |
| 33,635 | Belting for machines | London, England | Agency |
| 33,707 | Office supplies | Winnipeg, Canada | Agency |
| 33,734 | Tires | Rosario, Argentina | Both |
| 33,738 | Toys | Rosario, Argentina | Purchase |
| 33,772 | Canvas shoes | London, England | Agency |
| 33,773 | Belting | Vienna, Austria | Purchase |
| 33,774 | Tires | Birmingham, England | Agency |
| 33,775 | Soles and heels | Hamburg, Germany | Agency |
| 33,776 | Footwear | London, England | Agency |
| 33,823 | Tennis balls and shoes | Surabaya, Java | Purchase |
| 33,842 | Balloons | Nuremberg, Germany | Purchase |
| 33,843 | Footwear, caps and surgical goods | Budapest,, Hungary | Either |
| 33,844 | Bathing caps | Barcelona, Spain | Agency |
| 33,909 | Novelties | London, England | Either |
| 33,910 | Tires | Bucharest, Rumania | Agency |
| 33,942 | Bathing caps and toys | Barcelona, Spain | Agency |
| 33,944 | Surgeons' gloves | Vienna, Austria | Agency |
| 34,022 | Household goods | Wellington, N. Zealand | Both |
| 34,025 | Fruit jar rings | Petersham, England | Agency |
| 34,056 | Belts and technical goods | Halle, Germany | Purchase |
| 34,057 | White canvas shoes | Guayaquil, Ecuador | Agency |
| 34,069 | Dental rubber | Nishi-ku, Japan | Both |

# Foreign Trade Circulars

*Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C.*

| NUMBER | SPECIAL CIRCULARS |
|---|---|
| 2086 | Tire Exports. |
| 2090 | Rubber and Balata Belting Exports. |
| 2095 | Tire Exports. |
| 2097 | Rubber Footwear Exports. |
| 2100 | Schedule B Export Classification of Waterproof and Coated Fabrics Effective January 1, 1929. |

## Reclaim with Waste Caustic

Experiments in European rubber reclaiming works indicate that sodium hydroxide (caustic soda) solution used in the preparation of viscose and various cellulose products, and hitherto discharged as waste, is a far more active and rapid regenerating agent in the alkali process of reclaiming rubber than is unused caustic soda. It is also held that the reclaim thus produced is a much closer approximation to raw rubber than that made with fresh caustic soda which has not been in contact with cellulose materials. Its use is referred to in the British patent of W. Scheithauer, No. 270,675.

# MARKET REVIEWS

## Crude Rubber

### New York Exchange

TRANSACTIONS on the Rubber Exchange from September 24 to October 24 inclusive were 6,692 lots, equivalent to 16,730 tons, compared with 19,605 tons done from August 27 to September 22 inclusive. This decline of 2,875 tons or 14 per cent is the same percentage decline that marked trading of the previous monthly period. This hesitation to trade is due to the uncertainty as to the immediate effect of the removal on November 1 of British export restriction. Trading in B contracts was limited to a single lot only during the month.

Summarized by weekly periods the course of the market was as follows, beginning with the week closed September 29, when the market was steady and uninteresting. The volume of trade was 1,552 contracts. Prices ruled a little higher than those of the week previous. The spreads between high and low were very narrow. Spot closed at 18.2 cents nominal, December at 18.3 cents, March at 18.2 to 18.3 cents, May at 18.4 to 18.5 cents, July at 18.4 to 18.5 cents. There was no factory interest in futures. Large trade interests absorbed the bulk of the offerings which came principally from dealers. A small speculative interest in the far forward positions was noted but the action of the market did not attract outside interest in any volume.

Trading in the week ended October 6 exhibited more activity, 1,774 contracts being sold. Prices gained advances equal to those of the week previous. Interest on the part of manufacturers was greater in this year's positions than for those of next. There was a tendency for prices to move upward on moderate buying. Ribbed smoked sheets advanced in all positions from 40 to 50 points. Spot closed at 18.4 cents nominal; October closed at 18.50 to 18.80 cents; December, 18.80 cents; January, 18.50 to 18.60 cents; March, 18.60 cents; May, 18.90 cents nominal; and July, 18.80 cents. Transactions October 5 were confined to December, March and July positions.

During the week terminated October 13 the Exchange was closed Friday and Saturday on account of a holiday. Contracts sold numbered 1,565. Trading was characterized by steady accumulation on the part of operators. Fluctuations were a little wider than during previous weeks. Factories bought daily in moderate quantities. Reports from large consuming centers indicated that no important slowing down of goods production was in progress in the rubber industry.

Spot ribs closed at 18.7 cents nominal. Transactions on futures closed as follows: December at 18.9 cents; January at 18.7 cents; March at 18.7 to 18.8 cents; September at 19.1 cents.

Trading during the week ended October 20 was the least active of the weeks under review. Contracts sold totaled 1,413. Buying on the part of factories became more irregular. The attitude adopted on all sides is one of waiting pending developments that will result from the removal of restrictions on November 1.

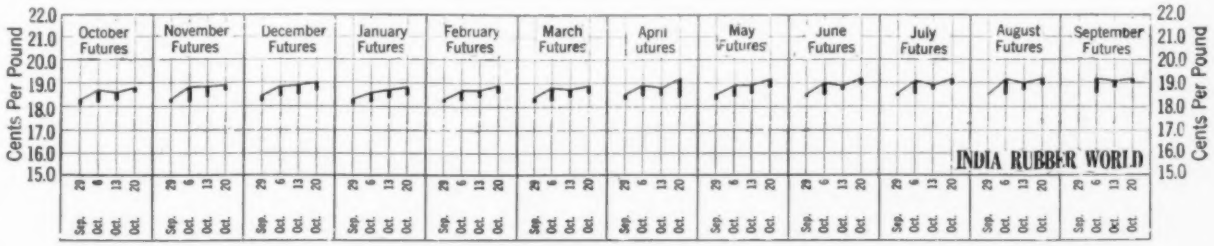
Spot ribs closed at 18.8 cents nominal. Transactions on futures closed as follows: December at 18.8 to 18.9 cents; March at 18.8 to 18.9 cents; May at 18.9 cents; July at 19.0 to 19.1 cents.

Regarding world stocks H. Hentz & Co., New York, are quoted as follows regarding their amount and probable movement after November 1.

Summing up the principal world stocks (U. S. on hand and afloat, London and Singapore and Penang) at the end of September, the total is 163,760 tons, which compares with a total of 237,075 tons at the end of December, 1927, or a decrease of 73,315 tons. This is approximately what is generally anticipated as surplus accumulations on eastern estates, but we do not feel it will be unduly forced on the market with the removal of restrictions. Also such a figure cannot be taken entirely as representing accumulations in anticipation of restrictions removal, as a conservative allowance of 20,000 tons should be made as normal estates' holdings.

F. R. Henderson was reelected president of the Rubber Exchange of New York for a third term at the annual election held October 16. Charles T. Wilson was re-

### New York Rubber Exchange—High and Low Monthly Features




### The Rubber Exchange of New York, Inc.

DAILY MARKET FUTURES—RIBBED SMOKED SHEETS—CLOSING PRICES—CENTS PER POUND—"A" CONTRACTS

| Positions | September | | | | | | October | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1928 | 24 | 25 | 26 | 27 | 28 | 29 | 1 | 2 | 3 | 4 | 5 | 6 | 8 | 9 | 10 | 11 | 12* | 13* | 15 | 16 | 17 | 18 | 19 | 20 | 22 | 23 | 24 |
| September | 18.1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| October | 18.1 | 18.2 | 18.3 | 18.2 | 18.1 | 18.1 | 18.2 | 18.2 | 18.2 | 18.3 | 18.5 | 18.7 | 18.3 | 18.3 | 18.4 | 18.6 | .... | .... | 18.8 | 18.8 | 18.8 | 18.7 | 18.6 | 18.7 | 18.7 | 18.7 | 18.7 |
| November | 18.2 | 18.3 | 18.3 | 18.3 | 18.2 | 18.2 | 18.3 | 18.2 | 18.2 | 18.4 | 18.7 | 18.8 | 18.4 | 18.4 | 18.6 | 18.8 | .... | .... | 18.9 | 18.9 | 18.8 | 18.8 | 18.7 | 18.7 | 18.7 | 18.7 | 18.7 |
| December | 18.2 | 18.4 | 18.3 | 18.3 | 18.3 | 18.3 | 18.4 | 18.4 | 18.4 | 18.6 | 18.8 | 18.8 | 18.5 | 18.6 | 18.6 | 18.9 | .... | .... | 19.0 | 18.9 | 18.9 | 18.9 | 18.8 | 18.7 | 18.7 | 18.8 | 18.7 |
| 1929 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| January | 18.2 | 18.2 | 18.3 | 18.3 | 18.1 | 18.2 | 18.2 | 18.3 | 18.2 | 18.4 | 18.5 | 18.6 | 18.4 | 18.4 | 18.5 | 18.7 | .... | .... | 18.8 | 18.7 | 18.8 | 18.7 | 18.7 | 18.5 | 18.6 | 18.6 | 18.6 |
| February | 18.2 | 18.3 | 18.3 | 18.3 | 18.2 | 18.2 | 18.3 | 18.4 | 18.3 | 18.4 | 18.6 | 18.7 | 18.4 | 18.4 | 18.6 | 18.7 | .... | .... | 18.9 | 18.8 | 18.8 | 18.8 | 18.8 | 18.6 | 18.7 | 18.7 | 18.6 |
| March | 18.3 | 18.4 | 18.4 | 18.3 | 18.2 | 18.2 | 18.4 | 18.4 | 18.3 | 18.4 | 18.6 | 18.8 | 18.4 | 18.5 | 18.6 | 18.7 | .... | .... | 18.9 | 18.8 | 18.8 | 18.8 | 18.8 | 18.6 | 18.7 | 18.7 | 18.6 |
| April | 18.3 | 18.4 | 18.5 | 18.3 | 18.3 | 18.3 | 18.5 | 18.5 | 18.4 | 18.5 | 18.7 | 18.9 | 18.5 | 18.6 | 18.7 | 18.8 | .... | .... | 19.2 | 18.9 | 18.9 | 18.9 | 18.9 | 18.7 | 18.8 | 18.8 | 18.7 |
| May | 18.4 | 18.5 | 18.5 | 18.3 | 18.4 | 18.4 | 18.5 | 18.5 | 18.4 | 18.6 | 18.9 | 18.9 | 18.6 | 18.7 | 18.7 | 18.9 | .... | .... | 19.2 | 19.0 | 18.9 | 18.9 | 18.9 | 18.8 | 18.9 | 18.9 | 18.8 |
| June | 18.4 | 18.5 | 18.5 | 18.4 | 18.4 | 18.4 | 18.6 | 18.5 | 18.5 | 18.6 | 18.8 | 19.0 | 18.7 | 18.7 | 18.8 | 18.9 | .... | .... | 19.2 | 19.0 | 19.0 | 19.0 | 19.0 | 18.9 | 18.9 | 18.9 | 18.9 |
| July | 18.4 | 18.5 | 18.5 | 18.4 | 18.5 | 18.4 | 18.6 | 18.5 | 18.6 | 18.6 | 18.8 | 19.1 | 18.7 | 18.8 | 18.8 | 18.9 | .... | .... | 19.2 | 19.1 | 19.0 | 19.1 | 19.0 | 18.9 | 19.0 | 19.0 | 18.9 |
| August | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.6 | 18.5 | 18.6 | 18.7 | 18.9 | 19.2 | 18.7 | 18.8 | 18.9 | 19.0 | .... | .... | 19.2 | 19.1 | 19.1 | 19.0 | 19.1 | 18.9 | 19.0 | 19.0 | 19.0 |
| September | .... | .... | .... | .... | .... | .... | 18.7 | 18.6 | 18.7 | 18.7 | 18.9 | 19.2 | 18.8 | 18.8 | 18.9 | 19.1 | .... | .... | 19.2 | 19.1 | 19.1 | 19.0 | 19.1 | 19.0 | 19.0 | 19.1 | 19.0 |

*Holiday.

elected vice president and J. C. Cuppia reelected treasurer.

The following were elected members of the Board of Governors: Harold L. Bache, Robert L. Pairu, William E. Bruyn, James T. Bryan, Herbert S. DeLanie, David D. Haldane, George H. Hutzler, Louis V. Keeler, David S. Kubie, Jerome Lewine, Fred Pusinelli and Edward J. Wade.

The exchange now has 47 foreign members and 208 in the United States. During the fiscal year the memberships of the exchange attained a record price of $13,000. By vote of the members the dues for the ensuing year are fixed at $300. This is an increase of $25 over the previous year.

Futures contracts representing a value of $295,000,000 were traded in on the Rubber Exchange of New York during the fiscal year ended August 31 last. A total of 188,400 contracts, equivalent to 4,710,000 long tons, changed hands on the exchange.

President F. R. Henderson in his report to members pointed out that the year had been a difficult one for the rubber industry and that the uncertainty of the market at times had restricted operations. He said that manufacturers were compelled to take heavy losses during the first half of the current year, due to the announcement of the ending of British restriction of exports on November 1, but that the outlook for the future is decidedly bright.

"Unrestricted output will, of course, act as a check on any substantial move upwards, and at the same time the present level of price encourages the development of new uses, which in turn will increase consumption. In the end these opposing forces will work to the economic solution of the problems of planter and consumer alike. The exchange offers a medium for the full expression of market views or price trend opinions, and is the only means of compelling a healthful situation in our rubber market."

## New York Outside Market

During the past month consumers' interest in purchasing rubber has been at low ebb. They were planning to keep their stocks low on all supplies in view of the approaching year end inventory season and they hope that the abandonment of export restrictions on British grown rubber will result in lower prices for crude.

Present market conditions are unusually complicated by conflicting views but the majority opinion is optimistic in view of the belief that the surplus rubber to be released after November 1 will just about restore to normal the present reduced London and United States stocks. Further the heavy increase in car production announced for 1929 by the automobile industry will readily absorb the surplus offerings of crude rubber and maintain the price level.

The general features of the outside market by weekly periods were as follows:

The market for the week ended September 29 was extremely dull. There was a slight hardening of prices due to the fact that shippers were not offering rubber freely. Such offers as were made resulted in no business because they were too much above the market. Factories were slightly interested at prices one quarter to three eighths of a cent under offered prices but no rubber was available under those conditions. Because the week under review ended the month of September, manufacturers held back, were checking stocks and awaiting report of consumption figures.

Spot closing prices were: ribs at 18¼ cents buyers, 18¾ cents sellers; first latex at a premium of 1 cent above ribs. "B" blanket crepe at 18⅜ cents buyers, 18½ cents sellers; No. 1 roll brown at 17½ cents buyers, 17¾ cents sellers.

Paras were quoted higher, Upriver fine at 19 cents buyers, 19¼ cents, sellers.

The market of the week closed October 6 was extremely steady with a fair amount of factory business offered at a little under the market. The eastern markets held firm. Offers at a fair price were quickly picked up. On bids sent to the east—prices were generally higher and offerings smaller. The sentiment of the market became bullish with the increase of inquiry from the outside. At the close on Saturday the market was very firm.

Spot closing prices for the week were: ribs 18¾ cents buyers, 19 cents sellers; first latex 19⅝ cents buyers, 19¾ cents sellers; "B" blanket crepe 18⅜ cents buyers, 18½ cents sellers; "C" blanket crepe 17¾ cents buyers, 18 cents sellers; No. 1 roll brown, 17¼ cents buyers, 17½ cents sellers.

Paras were firmer due to reluctance of Brazilian sellers to offer at prevailing low prices. Upriver fine 19½ cents buyers, 19¾ cents sellers. Balata was fairly firm but little business passing.

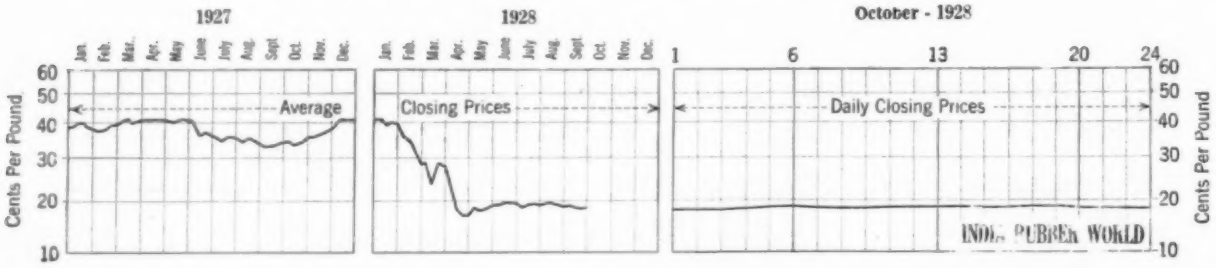
The market of the week ended October 13 was limited by the holiday to four days during which time prices were characterized by a distinct firmness closing at the top on Thursday. First latex, "B" and "C" blanket and roll brown continued scarce. Factories bought rubber but many delayed to do so, hoping for lower prices. The firm offers of the eastern markets indicate no immediate decline.

Spot prices closed as follows: first latex 19¾ cents buyers, 19⅞ cents sellers; ribs 18¾ cents buyers, 19 cents sellers; "B" blanket crepe 19½ cents buyers, 19⅝ cents sellers; "C" blanket crepe 18¾ cents buyers, 18⅞ cents sellers.

Para grades were steadier, offerings small at higher quotations but with less demand. Upriver fine closed at 19¾ cents buyers, 20 cents sellers. Balata was very quiet with sheets offered at 46 cents, block at 43 cents. There was no demand for sheets and not much for block.

Quiet and steadiness characterized the market during the week closed October 20. There was no disposition for traders

### New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets




### New York Outside Market—Spot Closing Rubber Prices—Cents Per Pound

| Plantations | September 24 | 25 | 26 | 27 | 28 | 29 | October, 1928 1 | 2 | 3 | 4 | 5 | 6 | 8 | 9 | 10 | 11 | 12* | 13* | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sheet | | | | | | | | | | | | | | | | | | | | | | | | |
| Ribbed smoked | 18⅛ | 18⅜ | 18¼ | 18¼ | 18¼ | 18¼ | 18⅛ | 18⅜ | 18⅜ | 18½ | 18¾ | 18⅞ | 18⅝ | 18⅝ | 18⅝ | 18⅞ | .... | .... | 19 | 18⅞ | 18⅞ | 19 | 19 | 18⅞ |
| Crepe | | | | | | | | | | | | | | | | | | | | | | | | |
| First latex | 19⅛ | 19⅛ | 19⅛ | 19⅛ | 19⅛ | 19¼ | 19⅛ | 19½ | 19⅛ | 19¼ | 19⅜ | 19½ | 19⅜ | 19¼ | 19½ | 19⅝ | .... | .... | 19¾ | 19¾ | 19¾ | 19¾ | 19¾ | 19¾ |
| "B" blanket | 18¼ | 18⅜ | 18¼ | 18¼ | 18 | 18 | 18 | 18¼ | 18¼ | 18¼ | 18½ | 18⅝ | 18¼ | 18¼ | 18⅜ | 18⅝ | .... | .... | 18¾ | 18½ | 18½ | 18½ | 18½ | 18½ |
| "C" blanket | 18 | 18⅛ | 18 | 18 | 17¾ | 17¾ | 17⅞ | 17⅞ | 18 | 17⅞ | 18¼ | 18⅜ | 18⅛ | 18⅛ | 18¼ | 18⅛ | .... | .... | 18½ | 18⅜ | 18⅜ | 18⅜ | 18⅜ | 18¼ |
| "D" blanket | 17⅝ | 17⅞ | 17¾ | 17¾ | 17½ | 17½ | 17⅝ | 17⅝ | 17¾ | 17⅝ | 18 | 18⅛ | 17⅞ | 17⅞ | 18 | 18⅛ | .... | .... | 18¼ | 18⅛ | 18⅛ | 18⅛ | 18⅛ | 18⅛ |
| No. 2 brown | 18 | 18¼ | 18¼ | 18 | 17¾ | 17¾ | 17⅞ | 17⅞ | 18 | 17⅞ | 18¼ | 18⅜ | 18⅛ | 18⅛ | 18¼ | 18⅛ | .... | .... | 18½ | 18⅜ | 18⅜ | 18⅜ | 18⅜ | 18¼ |
| Rolled brown | 17⅝ | 17¾ | 17⅝ | 17⅝ | 17⅝ | 17⅝ | 17 | 16⅜ | 16½ | 16⅜ | 17 | 17¼ | 17 | 17 | 17 | 17⅛ | .... | .... | 17⅜ | 17⅛ | 17⅛ | 17⅛ | 17⅛ | 17 |
| Off latex | 18⅞ | 19 | 18¾ | 18⅞ | 18⅞ | 18⅞ | 18⅞ | 19 | 18⅞ | 19 | 19¼ | 19⅛ | 19⅛ | 19⅛ | 19¼ | 19⅛ | .... | .... | 19½ | 19½ | 19½ | 19½ | 19½ | 19½ |

*Holiday.

to buy or sell with the factories quietly awaiting developments of November 1. The arrivals thus far in the month were light making for a steady firm spot and nearby market. The shipment market was steady with Ceylon offers too high for sale in New York.

Spot closing prices were as follows: first latex at 20 cents buyers, 20¼ cents sellers; ribs at 18⅞ cents buyers, 19 cents sellers; "B" blanket crepe at 18⅝ cents buyers, 18¾ cents sellers; "C" blanket crepe 18¼ cents buyers, 18⅜ cents sellers. Paras were firmer with no inclination of the primary market to sell while the price rises on holding. Upriver fine closed at 21 cents buyers, 21½ cents sellers. Balata was steady and quiet.

On October 25, spot ribs closed at 18⅞ to 19 cents; first latex was 19½ to 20 cents.

Importations of all grades in September were 46,662 tons, compared with 32,798 tons one year ago. Plantation arrivals for September were 45,663 tons, compared with 31,064 tons one year ago. Total importations of plantation rubber for eight months ended September 30 were 308,363 tons compared with 311,427 tons for the corresponding period of 1927. Total importations of all grades of rubber for eight months ended September 30 were 322,346 tons, compared with 331,383 tons for the corresponding period of 1927.

**RUBBER AFLOAT TO THE UNITED STATES**

(All figures in long tons)

| Week Ended | British Malaya | Ceylon | Netherland East Indies | London and Liverpool | Total |
|---|---|---|---|---|---|
| Sept. 29.. | 4,402 | 979 | 2,034 | 1,498 | 8,913 |
| Oct. 6.... | 4,262 | 756 | 2,108 | 1,672 | 8,798 |
| Oct. 13... | 3,751 | 1,017 | 1,303 | 1,754 | 7,825 |
| Oct 20... | 3,850 | 470 | 1,783 | 670 | 6,773 |
| Oct. 27... | 2,784 | 981 | 2,358 | 788 | 6,911 |

## London

The market from October 1 to 13 had a firm upward tendency and was moderately active. Spot ribs closed on the 1st at 18⅞ pence and on the 13th firm at 8⅛ pence. Report of heavy American tire production raised the price on the 15th to 9⅛ pence from which point it declined in a dull week to 8⅞ pence on October 20. The price declined on October 25 to 8⅛ pence buyers, 8⅞ pence sellers.

The weekly record of London stocks since September 22 is as follows: September 29, 31,462 tons; October 6, 29,527 tons; October 13, 27,370 tons; October 20, 26,477 tons.

## Singapore

About the middle of October values touched a low point with the undertone of the market undecided although there was buying support for nearby rubber. Later October advices reported the market dull, inactive and declining. As the year approaches its end the expectation gains that still cheaper rubber will be realized despite the large increase in world consumption.

## New York Quotations

***Following are the New York open market rubber quotations for one year ago, one month ago and October 25, the current date***

| Plantation Hevea | October 25, 1927 | September 25, 1928 | October 25, 1928 |
|---|---|---|---|
| Rubber latex (Hevea)..gal. | $1.50 @ | $1.40 @ | $1.40 @ |
| **CREPE** | | | |
| First latex spot | .34¾@.35 | .19 @.19¼ | .19½@.20 |
| October | .34¾@.34⅞ | .19 @.19½ | .20 @ |
| November-December | .34¾@.34⅞ | .19¼@ | .19½@.20 |
| January-March | .35 @.35⅜ | .18¾@.19 | .19½@.20 |
| April-June | .35½@.35¾ | .18½@ | .19⅝@.19¾ |
| Off latex, spot | .34 @.34¼ | .19 @ | .19 @.19½ |
| "B" Blanket, spot | .31 @.31¼ | .18 @.18¼ | .18¾@ |
| October | .31¼@.31½ | .18 @ | .18¾@ |
| November-December | .31¼@.31½ | .18 @ | .18¾@ |
| January-March | .31¾@ | .17¾@ | .18⅜@.18⅝ |
| April-June | .32½@ | .17⅝@ | .18½@ |
| "C" Blanket, spot | .30½@ | .17¾@.18 | .18¼@.18½ |
| Brown No. 1 | .30¼@.30½ | .17½@ | .18⅝@.18¾ |
| Brown No. 2 | .29 @.29¼ | .17¼@ | .18 @.18¼ |
| Brown, roll | .27½@.28 | .17 @ | .17 @.17⅝ |
| **Sheet** | | | |
| Ribbed, smoked spot | .34¼@.34½ | .18 @.18⅛ | .18⅞@.19 |
| October | .34½@.34¾ | .18⅛@ | .19 @ |
| November-December | .34½@.34¾ | .18⅛@ | .18⅞@.19 |
| January-March | .34¾@.35⅛ | .18¾@.18¾ | .18⅞@.19⅛ |
| April-June | .35⅛@.35¾ | .18¼@.18¾ | .19 @.19⅛ |
| **East Indian** | | | |
| **PONTIANAK** | | | |
| Banjermasin | .09 @.10 | .10 @ | @ |
| Pressed block | .15 @ | .15 @ | .17½@ |
| Sarawak | .10 @ | .09¼@ | @ |
| **South American** | | | |
| **PARAS** | | | |
| Upriver, fine | .27¼@ | .19 @ | .21 @ |
| Upriver, fine | *.37½@ | *.24 @ | *.25½@ |
| Upriver, coarse | .21½@ | .13½@ | .14½@ |
| Upriver, coarse | *.30⅛@ | *.19¾@ | *.20 @ |
| Islands, fine | .25 @ | @ | @ |
| Islands, fine | *.36 @ | *.23½@ | *.25 @ |
| Acre, Bolivian, fine | .27¼@ | .19½@ | .21½@ |
| Acre, Bolivian, fine | *.38 @ | *.24 @ | *.26 @ |
| Beni, Bolivian | .28 @ | .20 @ | .22 @ |
| Madeira, fine | .27½@ | .19¼@ | .21 @ |

| South American | October, 25, 1927 | September, 25, 1928 | October, 25, 1928 |
|---|---|---|---|
| PARAS—*Continued* | | | |
| Peruvian, fine | @ | $0.18¾@ | $0.20½@ |
| Tapajos, fine | @ | .18¼@ | .20 @ |
| **CAUCHO** | | | |
| Upper caucho ball | .22 @ | .12½@ | .13 @ |
| Upper caucho ball | *.30½@ | *.19¾@ | *.20 @ |
| Lower caucho ball | .20½@ | .12 @ | .12½@ |
| **Maniçobas** | | | |
| Ceará negro heads | .22 @ | †.17 @ | †.17 @ |
| Ceará scrap | .12 @ | †.09 @ | †.09 @ |
| Manicoba,30% guaranteed | .22 @ | †.19 @ | †.19 @ |
| Mangabiera, thin sheet | .22 @ | †.19 @ | †.19 @ |
| **Centrals** | | | |
| Central scrap | .20½@ | .14½@ | .14¼@.14¾ |
| Central wet sheet | .14 @ | .12 @ | .10 @.12 |
| Corinto scrap | .20½@ | .14½@ | .14¼@.14¾ |
| Esmeralda sausage | .20½@ | .14½@ | .14¼@.14¾ |
| **Guayule** | | | |
| Duro, washed and dried | .28 @ | .18½@ | .17½@ |
| Ampar | @ | .19½@ | .18½@ |
| **Gutta Percha** | | | |
| Gutta Siak | .22 @ | .19 @ | .22 @.22½ |
| Gutta Soh | .38 @ | .30 @ | .32 @.34 |
| Gutta Macassar | 2.90 @ 3.00 | 3.00 @ | 2.75 @ 3.00 |
| **Balata** | | | |
| Block, Ciudad Bolivar | .48 @ .50 | .43 @ | .46 @.47 |
| Colombia | .39 @ | .48 @ | .46 @.47 |
| Manaos block | .50 @ | .44 @ | .47 @.48 |
| Panama | .41 @ | .48 @ | .46 @.47 |
| Surinam sheet | .58 @ | .46 @ | .45 @.47 |
| Amber | .62 @ .63 | .49 @ | .50 @.52 |
| **Chicle** | | | |
| Honduras | ‡.68 @ | ‡.68 @ | .68 @ |
| Yutacan, fine | ‡.68 @ | ‡.68 @ | .68 @ |

*Washed and dried crepe. Shipment from Brazil.
†Nominal. ‡Duty paid.

## Low and High New York Spot Prices

| | 1928* | October 1927 | 1926 |
|---|---|---|---|
| PLANTATIONS | | | |
| First latex crepe | $0.19 @$0.20¼ | $0.33⅛@$0.35½ | $0.42 @$0.43¼ |
| Smoked sheet, ribbed | .18¼@ .19⅛ | .33 @ .35½ | .42 @ .43 |
| PARAS | | | |
| Upriver, fine | .19 @ .21½ | .27 @ .28¾ | .37¾@ .39 |
| Upriver, coarse | .13¼@ .14½ | .19 @ .21¼ | .28 @ .30 |
| Islands, fine | .18 @ .20 | .26 @ .28 | .34 @ .37½ |

*Figured to October 25, 1928.

## Plantation Rubber Exports from Malaya*

January 1 to July 31, 1928

| To | From Singapore Tons | From Penang Tons | From Malacca Tons |
|---|---|---|---|
| United Kingdom | 3,174.69 | 3,703.91 | 3,049.30 |
| British Possessions | 2,026.77 | 168.00 | 175.00 |
| Continent of Europe | 6,275.80 | 956.67 | 1,681.11 |
| United States | 82,962.35 | 14,627.49 | 5,035.09 |
| Japan | 9,236.00 | 1,229.50 | 1,196.00 |
| Other countries | 164.83 | ..... | ..... |
| Totals | 103,840.44 | 20,685.57 | 11,136.50 |

*Excluding all foreign transhipment.

# Reclaimed Rubber

CONSUMPTION of reclaimed rubber during October gained in those lines of which it is a staple ingredient. Many far-sighted large users are placing contracts for their needs during the next year in anticipation of the demand consequent on the enlarged program for automobile production for 1929. Already this is having the effect of stimulating reclaim production which is proceeding on a three-shift basis. Marked activity of production is noted in tires, tubes, automobile topping, heels, soles, auto step mats, etc. In all of these lines reclaim holds a place of well recognized importance technically and economically. A stronger demand is developing for those grades made from the highest class of raw materials, particularly those characterized by light gravity and high rubber content.

Current price quotations remain unchanged from a month ago except in the cases of black high tensile and No. 1 inner tubes which have declined a half cent each.

Prices on all grades are very competitive and represent values greatly in the purchaser's favor.

### New York Quotations

October 25, 1928

| High Tensile | Spec. Grav. | Price Per Pound |
|---|---|---|
| Super-reclaim, black | 1.20 | $0.12½ @ $0.13 |
| red | 1.20 | .13¼ @ .13½ |
| **Auto Tire** | | |
| Black | 1.21 | $0.07½ @ $0.07¾ |
| Black selected tires | 1.18 | .08 @ .08¼ |
| Dark gray | 1.35 | .09½ @ .09¾ |
| Light gray | 1.38 | .12 @ .12½ |
| White | 1.40 | .13 @ .13½ |
| **Shoe** | | |
| Unwashed | 1.60 | .07¼ @ .07½ |
| Washed | 1.50 | .10 @ .10¼ |
| **Tube** | | |
| No. 1 | 1.00 | .14 @ .14½ |
| No. 2 | 1.10 | .11 @ .11½ |
| **Miscellaneous** | | |
| Red | 1.35 | .13 @ .13¼ |
| Truck tire, heavy gravity | 1.55 | .07 @ .07¼ |
| Truck tire, light gravity | 1.40 | .07½ @ .07¾ |
| Mechanical blends | 1.60 | .06¾ @ .07½ |

# Rubber Scrap

THE demand for rubber scrap during October compared favorably with that of the month previous. Tire collection is active and stocks are increasing at warehouse points. On all grades except white beadless and mixed motor truck tires, the demand is active. On mixed auto tires with beads, mixed beadless auto tires and mixed auto peelings prices have advanced from 50 cents to $1 per ton.

Boots and shoes are unchanged and dull. Collections are light and dealers' stocks are kept low purposely.

Collection and movement of scrap solid tires remains relatively inactive because freight rates are out of proportion to solid tire scrap value. This results in the destruction of the rubber for the sake of salvaging the steel rims only.

Air brake hose holds in good demand and has advanced to $25 per ton or $5 up from last month's quotation. Other grades of mechanical scrap are unchanged and dull.

All qualities of inner tubes are active. No. 1 floating and red are quoted ¼ cent higher. The other qualities are unchanged.

Hard rubber scrap is practically unavailable as to supply. The demand is very active both for No. 1 grade and compounded battery jars.

### New York Quotations
**Carload Lots**

October 25, 1928

| Mechanicals | Price Per Pound |
|---|---|
| Mixed black scrap, lb. | $0.00½ @ $0.00⅝ |
| Heels, lb. | .00½ @ .00⅝ |
| Hose, air brake, ton | 25.00 @ 27.00 |
| regular soft, ton | 13.00 @ 15.00 |
| No. 1 red, lb. | .02 @ .02¼ |
| No. 2 red, lb. | .01 @ .01⅛ |
| White, druggists' sundries, lb. | .02 @ .02½ |
| Mechanical, lb. | .01½ @ .01⅝ |
| **Tires** | |
| Pneumatic Standard— | |
| Mixed auto tires with beads, ton | $23.00 @ $24.00 |
| Beadless, ton | 29.00 @ 30.00 |
| White auto tires with beads, ton | 38.00 @ 39.00 |
| Beadless, ton | 46.00 @ 48.00 |
| Mixed auto peelings, ton | 31.00 @ 32.00 |
| Solid— | |
| Mixed motor truck, clean, ton | 17.50 @ |
| **Inner Tubes** | |
| No. 1, floating, lb. | .06¼ @ .06½ |
| No. 2, compounded, lb. | .03⅜ @ .03¾ |
| Red, lb. | .04¼ @ .04⅜ |
| Mixed tubes, lb. | .03½ @ .03⅝ |
| **Boots and Shoes** | |
| Boots and shoes, black, lb. | .01⅛ @ .01⅜ |
| Red and white, lb. | .00½ @ .00¾ |
| Trimmed arctics, black, lb. | .00½ @ .00¾ |
| Untrimmed arctics, lb. | .00½ @ .00⅝ |
| Tennis shoes and soles, lb. | .00½ @ .00¾ |
| **Hard Rubber** | |
| No. 1 hard rubber, lb. | .08 @ .08½ |
| Battery jars, black compound, lb. | .01 @ .01⅛ |

# The Rubber Institute

## *Service Hints to Tire Users*

ON August 16th tire manufacturers extended the former warranty against defects to cover the life of the tire. The Rubber Institute in furtherance of the interests of tire users offers a number of practical suggestions for extending tire life to the maximum mileage.

It should be noted that the Standard Warranty is supported by the manufacturers of over 95 per cent of the tires produced in America. They place no limit on their responsibility for defects and guarantees to the careful driver maximum mileage and greatest economy.

The Rubber Institute recently offered some excellent practical suggestions showing how the dealers who handle these guaranteed tires add a further value to the services they render locally to motorists in connection with several important matters that vitally affect tire life.

Thousands of tire miles are lost because tires are not applied properly. Rims must run true or treads will grind off rapidly. Thus many tire miles may be saved and tire troubles eliminated by correct application.

Too low inflation in balloon tires causes rapid tire wear and deterioration. Undue punishment and possible damage may result also from too high inflation. The right pressure for each size of tire is known by the dealer and his inflation service will aid in prolonging tire life.

Experienced dealers are equipped to test wheel alinement. Wheels out of line cause rapid tread wear and few drivers are aware of this fault when it exists.

The motorist will do well to resort to expert repair shops. In every community they are responsible in part for long mileage records as well as for the economy and comfort of motoring. The workmanship of the tire builder, the services of the tire dealer and those of the expert repair shop are thus linked together for extending tire life to the maximum mileage.

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*Applications of rubber as a shock absorber are rapidly increasing. The ability of rubber to absorb shocks does not depend on its resiliency, but rather on its property to dissipate work done upon it.* *Read the article on page 57.*

# Compounding Ingredients

THE general demand for rubber compounding ingredients increased during the last month and the materials are moving in heavy volume. The production of tires, tubes, auto topping, step matting and other automobile rubber goods is proceeding at record output. These items representing over three quarters of the industry profoundly affect the consumption of compounding ingredients. No new ingredients are announced this month.

ACCELERATORS. In their efforts to simplify and economize on material and curing costs individual compounders are working with fewer accelerators, selecting those for general purposes that have all around practical effect with elimination of scorching. For special purposes these are supplemented by the ultra accelerators best suited to the particular occasion.

ANTI-OXIDANTS. All rubber makers are familiar with the great advantage that anti-oxidants confer on their products by extending their period of usefulness, hence the demand for all of the various brands of anti-oxidants has practically become standardized in all branches of rubber work.

BENZOL. The current supply of this material is somewhat restricted owing to the voluminous demand.

CARBON BLACK. A steady demand at unchanged prices featured the past month's trade in carbon black.

CLAY. Rubber compounders' interest in clay continues to result in increasing the volume of clay used by the industry. The interest is based on the cheapness of the material and its value as a reinforcing agent.

DEGRAS. Trade in this material is rather conservative although the demand is fair and steady.

LITHARGE. Late in September lithage advanced 25 cents per 100 pounds in an active market. In October the movement of this material was steady and large.

LITHOPONE. Production is reported at capacity and demand active.

MINERAL RUBBER. Prices are steady for this essential material which finds place as an adjuvant to rubber in multitudes of rubber goods including those of high quality.

SOLVENT NAPHTHA. The industrial demand showed increased activity the past month at firm prices.

V. M. P. NAPHTHA. Trade was largely confined to spot needs and became routine. This is the more commonly used grade of naphtha for rubber cement making.

STEARIC ACID. Within the past few weeks stearic acid advanced one and a half cents a pound. The market is strong, firm and active.

ZINC OXIDE. Rubber industry demand during the past month was steady and fairly active.

## New York Quotations

October 25, 1928

### Accelerators, Inorganic

| | | | |
|---|---|---|---|
| Lead, carbonate | lb. | $0.08½ | @ |
| Lead, red | lb. | .10 | @ |
| sublimed white | lb. | .07¾ | @ |
| sublimed blue | lb. | .07¾ | @ |
| super-sublimed white lead | lb. | .08¼ | @ |
| Lime, R. M. hydrated | ton | 12.50 | @ |
| Litharge | lb. | .09 | @ |
| Magnesia, calcined | lb. | .45 | @ .60 |
| carbonate | lb. | .06 | @ .07 |
| Orange mineral A.A.A | lb. | .12 | @ |

### Accelerators, Organic

| | | | |
|---|---|---|---|
| A-7 | lb. | .55 | @ .65 |
| A-11 | lb. | .62 | @ .75 |
| A-16 | lb. | .57 | @ .65 |
| A-19 | lb. | .58 | @ .75 |
| A-20 | lb. | .64 | @ .80 |
| A-32 | lb. | .78 | @ .95 |
| Aero X | lb. | | @ |
| Aldehyde ammonia | lb. | .65 | @ .70 |
| B. B. | lb. | | @ |
| Captax | lb. | | @ |
| Crylene, hard form | lb. | | @ |
| Paste | lb. | | @ |
| Di-ortho-tolylguanidine | lb | .48 | @ .50½ |
| D. P. G. | lb. | .40 | @ .45 |
| Ethylidine aniline | lb. | .45 | @ .47½ |
| Formaldehyde aniline | lb. | .31 | @ .35½ |
| Grasselerator 102 | lb | .58½ | @ .61 |
| 552 | lb. | 4.45 | @ |
| 808 | lb. | .79 | @ .85 |
| 833 | lb. | 1.17 | @ 1.30 |
| Heptene | lb. | | @ |
| Hexamethylene tetramine | lb. | .57½ | @ .61 |
| Lead oleate, No. 999 | lb. | .14¼ | @ |
| Witco | lb. | .14 | @ |
| Methylene dianiline | lb. | .37 | @ |
| Monex | lb. | | @ |
| Piperidine pentamethylene dithio carbamate | lb. | 4.45 | @ 4.60 |
| Plastone | lb. | | @ |
| R-2 | lb. | 2.00 | @ 2.50 |
| R. & H. 40 | lb. | .40 | @ .42½ |
| 50 | lb. | .40 | @ .42½ |
| Safex | lb. | | @ |
| Super-sulphur, No. 1 | lb. | | @ |
| No. 2 | lb. | | @ |
| Tensilac No. 39 | lb. | .50 | @ .52½ |
| No. 41 | lb. | .50 | @ .52½ |
| Thermlo F. | lb. | .50 | @ .55 |
| Thionex | lb. | 3.25 | @ |
| Thiocarbanilid | lb. | .22 | @ .27 |
| Trimene | lb | | @ |
| base | lb. | | @ |
| Triphenylguanidine | lb. | .60 | @ .67½ |
| Tuads | lb | | @ |
| Vulcanex | lb | .58 | @ |
| Vulcanol | lb. | .80 | @ |
| Vulcone | lb | .58 | @ |
| ZBX | lb. | | @ |
| Z-88 | lb. | .50 | @ .60 |
| Zimate | lb. | | @ |

### Acids

| | | | |
|---|---|---|---|
| Acetic 28% (bbls.) | 100 lbs. | 3.63 | @ 3.88 |
| glacial (carboys) | 100 lbs. | 13.30 | @13.55 |
| Sulphuric, 66° | 100 lbs. | 1.60 | @ |

### Alkalies

| | | | |
|---|---|---|---|
| Caustic soda, solid | lb | $0.03 | @ |

### Anti-Oxidants

| | | | |
|---|---|---|---|
| Age-Rite, powder | lb. | | @ |
| resin | lb. | | @ |
| white | lb. | | @ |
| Antox | lb. | | @ |
| Grasselerager A | lb. | .52 | @ .55 |
| Neozone | lb. | .69 | @ |
| A | lb. | .61 | @ |
| Oxynone | lb. | .68 | @ .90 |
| Resistox | lb. | .54 | @ .65 |
| Stabilite | lb. | .64 | @ |
| V. G. B. | lb. | | @ |

### Colors

BLACK

| | | | |
|---|---|---|---|
| Bone | lb. | .07 | @ .08½ |
| Carbon (see compounding ingredients) | | | |
| A. & W. nonfli No. 1 | lb. | .40 | @ |
| Drop | lb. | .05½ | @ .15 |
| Gastex | lb. | .05½ | @ .08 |
| Lampblack (commercial) | lb. | .09 | @ |

BLUE

| | | | |
|---|---|---|---|
| A. & W. blue | lb. | 1.25 | @ 5.00 |
| Akco blue | lb. | 1.80 | @ |
| Du Pont, N. | 100 lbs. | 1.35 | @ |
| Marine, A. C. | 100 lbs. | 1.30 | @ |
| 5 R. | 100 lbs. | 1.00 | @ |
| 2 G. | 100 lbs. | .90 | @ |
| Huber Brilliant | lb. | 4.20 | @ 4.70 |
| Prussian | lb. | .32 | @ .35 |
| Ultramarine | lb. | .06 | @ .30 |

BROWN

| | | | |
|---|---|---|---|
| Huber Mocha | lb. | 1.60 | @ 2.10 |
| Sienna, Italian, raw | lb | .05½ | @ .12½ |

GREEN

| | | | |
|---|---|---|---|
| A. & W. green | lb. | | @ |
| Akco green | lb. | 2.60 | @ |
| Chrome, light | lb. | .27 | @ .31 |
| medium | lb. | .28 | @ .31 |
| Du Pont, A. C. | 100 lbs. | 3.00 | @ |
| 4 G. | 100 lbs. | .60 | @ |
| G. I. | 100 lbs. | .30 | @ |
| Y. L. | 100 lbs. | .75 | @ |
| Huber Brilliant | lb. | 4.35 | @ |
| Oxide of chromium | lb. | .33 | @ .38 |

ORANGE

| | | | |
|---|---|---|---|
| Du Pont, 2 R. | 100 lbs. | 1.40 | @ |
| R. X. | 100 lbs. | 1.30 | @ |
| Y. O. | 100 lbs. | 1.60 | @ |
| Huber Persian | lb. | .50 | @ 1.00 |

RED

| | | | |
|---|---|---|---|
| A. & W. red | lb. | 0.75 | @ 2.50 |
| purple | lb. | 1.50 | @ 2.00 |
| Akco red | lb. | 2.75 | @ |
| Antimony, golden, No. 40 | lb. | | @ |
| No. 60 | lb. | .16 | @ .20 |
| golden 15/17% | lb | .20 | @ .25 |
| Aristi | lb. | 2.75 | @ |
| Huber Brilliant | lb. | 1.35 | @ 1.85 |

### Colors—*(Continued)*

RED

| | | | |
|---|---|---|---|
| Antimony | | | |
| Crimson, R.M.P. No. 3 | lb. | $0.48 | @ |
| Sulphur free | lb. | .52 | @ |
| 7-A. | lb. | .35 | @ |
| Z-2 | lb. | .22 | @ |
| Vermilion, No. 5 | lb. | | @ |
| No. 15 | lb. | | @ |
| Du Pont, R. I. | 100 lbs. | 1.75 | @ |
| 6 B. | 100 lbs. | .90 | @ |
| Brilliant A. C. | 100 lbs. | .90 | @ |
| Iron Oxides | | | |
| bright pure domestic | lb. | .12 | @ |
| bright pure English | lb. | .14 | @ |
| bright reduced English | lb. | .10 | @ |
| bright reduced domestic | lb. | .10 | @ |
| Indian (maroon), pure domestic | lb. | .11 | @ |
| Indian (maroon), pure English | lb. | .11 | @ |
| Indian (maroon), reduced English | lb. | .09½ | @ |
| Indian (maroon), reduced domestic | lb. | .08 | @ |
| Oximony | lb. | .13¼ | @ |
| Spanish red oxide | lb. | .04 | @ |
| Sunburnt red | lb. | .15 | @ |
| Venetian reds | lb. | .04 | @ |
| Vermilion, Eng. quicksilver | lb. | 1.90 | @ 2.00 |

WHITE

| | | | |
|---|---|---|---|
| Lithopone | lb. | .05¼ | @ |
| Albalith | lb. | | @ |
| Azolith | lb. | .05¼ | @ .05¾ |
| Grasselli | lb. | .05¼ | @ .05¾ |
| Sterling | lb. | | @ |
| Vanolith | lb. | .05¾ | @ |
| Titanox | lb. | .10 | @ .10½ |
| Zinc Oxide | | | |
| AAA (lead free) | lb. | .07 | @ |
| Azo (factory): | | | |
| ZZZ (lead free) | lb. | .06½ | @ .07 |
| ZZ (leaded) | lb. | .06½ | @ .06⅞ |
| Z (8% leaded) | lb. | .06⅜ | @ .06⅜ |
| French Process | | | |
| Green seal | lb. | .10⅜ | @ .10⅞ |
| Red seal | lb. | .09⅜ | @ .09⅞ |
| White seal | lb. | .11⅜ | @ .11⅞ |
| Kadox | lb. | | @ |
| XX | lb. | | @ |

YELLOW

| | | | |
|---|---|---|---|
| A & W. yellow | lb. | 1.60 | @ 4.00 |
| Akco yellow | lb. | 1.45 | @ |
| Cadmium sulphide | lb. | .75 | @ .85 |
| Chrome | lb. | .15½ | @ .16¼ |
| Du Pont N. | 100 lbs. | 4.00 | @ |
| R. W. | 100 lbs. | .78 | @ |
| Grasselli cadmium | lb. | | @ |
| Huber canary | lb. | 3.30 | @ 3.80 |
| Ochre, domestic | lb. | .01¼ | @ .02½ |
| Oxide, pure | lb. | .08½ | @ |
| Zinc imported | lb. | .23 | @ |

### Compounding Ingredients

| | | | |
|---|---|---|---|
| Aluminum flake (sacks,c.l.) | ton | 21.85 | @ |
| (sacks l.c.l.) | ton | 24.50 | @ |
| Ammonium carbonate pwd. | lb. | .11 | @ |
| lump | lb. | .10 | @ |
| Asbestine | ton | 13.40 | @13.50 |
| Barium, carbonate | ton | 60.00 | @ |

## Compounding Ingredients *(Continued)*

| | | | |
|---|---|---|---|
| Barytes, imported | ton | $27.00 | @$34.00 |
| dry ground, white | ton | 35.00 | @ |
| dry ground, off color | ton | 25.00 | @ |
| Foam "A" (f. o. b. St. Louis, bbls.) | ton | 23.00 | @ |
| Foam "A" (f. o. b. St. Louis, bags) | ton | 23.00 | @ |
| Basefor | lb. | .04½ | @ |
| Blanc fixe, dry | lb. | .03½ | @ |
| pulp | ton | 42.50 | @45.00 |
| Carbon Black | | | |
| Aerfloted arrow | lb. | .08½ | @ .12 |
| Compressed | lb. | .08 | @ .12 |
| Uncompressed | lb. | .07½ | @ .11½ |
| Fumonex | lb. | .06 | @ .09 |
| Micronex | lb. | .08½ | @ .12½ |
| Carrara filler | ton | 20.00 | @ |
| Chalk | ton | 12.00 | @ |
| Clay, Blue Ridge, dark | ton | | @ |
| Blue Ridge, light | ton | | @ |
| China | lb. | .01¼ | @ |
| Dixie | ton | | @ |
| Langford | ton | | @ |
| Mineral flour (Florida) | ton | | @ |
| Perfection | ton | 14.00 | @ |
| Suprex | ton | 10.00 | @22.00 |
| Tensulite | ton | 12.00 | @ |
| Cotton rock, black | lb. | .13 | @ |
| light-colored | lb. | .09½ | @ .10½ |
| white | lb. | .11 | @ .27 |
| Glue, high grade | lb. | .24 | @ .28 |
| low grade | lb. | .21 | @ .45 |
| Infusorial earth | ton | 45.00 | @ |
| Mica, amber (fact'y) | ton | 80.00 | @ |
| Neomerpin, S. A. conc | lb. | .60 | @ |
| Pumice stone, powd | lb. | .02½ | @ .04 |
| Rotten stone (bbls.) | lb. | .02½ | @ .04½ |
| Soap bark | lb. | .15½ | @ .16 |
| Soapstone | ton | 15.00 | @22.00 |
| Talc, domestic | ton | 25.00 | @ |
| French | ton | 18.00 | @22.00 |
| Pyrax A | ton | | @ |
| B | ton | | @ |
| Thermatomic carbon | lb. | | @ |
| Velvetex | lb. | .04½ | @ .06 |
| Whiting: | | | |
| Domestic | 100 lbs. | 1.00 | @ |
| English, cliffstone | 100 lbs. | 1.50 | @ |
| Quaker | ton | | @ |
| Snow white | ton | | @ |
| Sussex | ton | | @ |
| Vancolloid | ton | 27.00 | @ |
| Vansulite | ton | 12.00 | @ |
| Westminster Brand | 100 lbs. | | @ |
| Witco (c.l.) (fact'y) | ton | 12.00 | @ |
| Whiting, imp. chalk | 100 lbs. | .95 | @ 1.15 |
| Paris White, Eng. Cliff | 100 lbs. | 1.50 | @ 3.00 |

## New York Quotations

October 25, 1928

### Factice—See Rubber Substitutes

### Mineral Rubber

| | | | |
|---|---|---|---|
| Fluxrite (solid) | lb. | $0.05 | @$0.06 |
| Genasco (fact'y) | ton | 50.00 | @52.00 |
| Gilsonite (fact'y) | ton | 37.14 | @39.65 |
| Granulated M. R. | ton | | @ |
| Hydrocarbon, hard | ton | | @ |
| Hydrocarbon, soft | ton | | @ |
| Ohmlac Kapak, M. R. | ton | 40.00 | @90.00 |
| M-4 | ton | 175.00 | @ |
| Paradura (fact'y) | ton | 62.50 | @65.00 |
| Pioneer, M. R., solid (fac.) | ton | 42.00 | @44.00 |
| M. R. granulated | ton | 52.00 | @54.00 |
| Robertson, M. R., solid (fact'y) | ton | 34.00 | @80.00 |
| M. R. gran. (fact'y) | ton | 38.00 | @80.00 |
| Vansul Puro | ton | 27.00 | @ |

### Oils

| | | | |
|---|---|---|---|
| Mineral | gal. | .20 | @ |
| Kerosene | gal. | .15 | @ |
| Rapeseed | gal. | .82 | @ |
| Red oil, distilled | lb. | .09¼ | @ .10¼ |
| Rubber process | gal. | .28 | @ |
| Spindle | gal. | .30 | @ |

### Rubber Substitutes or Factice

| | | | |
|---|---|---|---|
| Black | lb. | .08 | @ .14 |
| Brown | lb. | .09 | @ .16 |
| White | lb. | .09 | @ .16 |

### Softeners

| | | | |
|---|---|---|---|
| Burgundy pitch | 100 lbs. | 6.00 | @ |
| Atlas | 100 lbs. | 6.50 | @ |
| Corn oil | lb. | .10½ | @ |
| Cottonseed oil | lb. | .11 | @ |
| Cycline oil | gal. | .28 | @ .35 |
| Degras | lb. | .03½ | @ .04½ |
| Fluxrite (fluid) | lb. | .05 | @ .06 |
| Moldrite | lb. | .07 | @ .07½ |
| Palm oil (Lagos) | lb. | .09½ | @ |
| Palm oil (Niger) | lb. | .09 | @ |
| Palm oil (Witco) | lb. | .09 | @ |
| Para-flux | gal. | .17 | @ |
| Petrolatum, snow white | lb. | .08 | @ .08¼ |
| Pigmentar | gal. | .33 | @ .39 |
| Pine oil, steam distilled | gal. | .63 | @ .64 |
| Rosin K | bbl. | 9.45 | @ |
| Rosin oil, compounded | gal. | .30 | @ |
| No. 3 | gal. | .59 | @ |
| No. 356 | gal. | .50 | @ |
| Rubite | lb. | .10 | @ .11 |
| Rubtack | lb. | .11 | @ |
| Shellac, orange | lb. | .70 | @ |

### Softeners—*(Continued)*

| | | | |
|---|---|---|---|
| Stearex | lb. | $0.15 | @$0.20 |
| Stearic acid, double pressed | lb. | .13 | @ .13½ |
| Tackol | lb. | .09 | @ .15 |
| Tar (retort) | bbl. | 12.50 | @13.00 |
| Tasco W-S No. 1 | lb. | .06 | @ |
| A | lb. | .05 | @ |
| Vansulol | lb. | .11 | @ |
| Vantar (Pine Tar) | gal. | .34 | @ |
| Waxene | lb. | .30 | @ .40 |
| Woburn oil | lb. | .05½ | @ .06 |

### Solvents

| | | | |
|---|---|---|---|
| Benzol (90%, 7.21 lbs. gal.) | gal. | .27 | @ .28 |
| Carbon bisulphide (99.9%, 10.81 lbs. gal.) (drums) | lb. | .05 | @ .06 |
| tetrachloride (99.7%, 13.28 lbs. gal.) (drums) | lb. | .06¼ | @ .06½ |
| Cyclohexanone | lb. | .60 | @ |
| Dip-Sol | gal. | .13 | @ |
| Gasoline | | | |
| No. 303 | | | |
| Tankcars | gal. | .15 | @ |
| Drums, c. l. | gal. | .31 | @ |
| Drums, l. c. l. | gal. | .36 | @ |
| Hexalin | lb. | .60 | @ |
| acetate | lb. | .65 | @ |
| Rubberlene | gal. | .12 | @ |
| Rub-Sol | gal. | .11 | @ |
| Solvent naphtha | gal. | .35 | @ |
| Sweet rubber cement | | | |
| naphtha | gal. | .15½ | @ |
| Turpentine, Venice | lb. | .20 | @ |
| steam distilled | gal. | .53 | @ .54 |

### Vulcanizing Ingredients

| | | | |
|---|---|---|---|
| Sulphur | | | |
| Velvet flour (240 lb. bbls.) | 100 lbs. | 2.95 | @ 3.50 |
| (150 lb. bags) | 100 lbs. | 2.60 | @ 3.15 |
| Soft rubber (c.l.) | 100 lbs. | 2.40 | @ 2.75 |
| (l.c.l.) | 100 lbs. | | @ |
| Superfine commercial flour | | | |
| (210 lb. bbls.) | 100 lbs. | 2.55 | @ 3.10 |
| (100 lb. bags) | 100 lbs. | 2.40 | @ 2.80 |
| Tire brand, superfine | 100 lbs. | 1.90 | @ 2.25 |
| Tube brand, velvet | 100 lbs. | 2.40 | @ 2.75 |
| Sulphur chloride | lb. | .03¼ | @ .03½ |
| Vandex (selenium) | lb. | | @ |

(See also Colors—Antimony)

### Waxes

| | | | |
|---|---|---|---|
| Beeswax, white, com | lb. | .55 | @ |
| carnauba | lb. | .33 | @ |
| ceresine, white | lb. | .12 | @ |
| montan | lb. | .07½ | @ |
| ozokerite, black | lb. | .27 | @ |
| green | lb. | .28 | @ |
| Paraffin | | | |
| 122/124 white crude scale | lb. | .06 | @ |
| 124/126 white crude scale | lb. | .06 | @ |
| 120/122 fully refined | lb. | .07½ | @ |
| 125/127 fully refined | lb. | .07½ | @ |

# Rims Approved by Tire & Rim Association

| Rim Size | September, 1928 Number | September, 1928 Per Cent | 9 Months, 1928 Number | 9 Months, 1928 Per Cent |
|---|---|---|---|---|
| Motorcycle | | | | |
| 28 x 2½ | ..... | ... | ..... | ... |
| 24 x 3 | 12,808 | 0.6 | 38,329 | 0.2 |
| 26 x 3 | 6,595 | 0.3 | 42,211 | 0.2 |
| 28 x 3 | ..... | ... | 753 | 0.6 |
| Clinchers | | | | |
| 30 x 3½ | 97,045 | 4.2 | 532,405 | 2.7 |
| 31 x 4 | ..... | ... | 2,392 | 0.0 |
| 18" Balloons | | | | |
| 18 x 3½ | ..... | ... | 9,362 | 0.0 |
| 18 x 4 | 98,513 | 4.2 | 1,032,012 | 5.2 |
| 18 x 3.25 | 49,958 | 2.1 | 129,478 | 0.7 |
| 18 x 4½ | 15,085 | 0.7 | 118,312 | 0.6 |
| 18 x 5 | 2,016 | 0.1 | 6,477 | 0.0 |
| 19" Balloons | | | | |
| 19 x 2.75 | 37,979 | 1.6 | 109,899 | 0.6 |
| 19 x 3½ | 82,623 | 3.6 | 1,469,291 | 7.4 |
| 19 x 4 | 359,593 | 15.5 | 2,154,859 | 10.9 |
| 19 x 3.25 | ..... | ... | 8,664 | 0.0 |
| 19 x 4½ | 37,385 | 1.6 | 756,488 | 3.8 |
| 19 x 5 | 16,792 | 0.7 | 46,949 | 0.2 |
| 20" Balloons | | | | |
| 20 x 2.75 | 62,669 | 2.7 | 211,937 | 1.1 |
| 20 x 3½ | 15,997 | 0.7 | 388,736 | 2.0 |
| 20 x 4 | 255,217 | 11.0 | 2,850,032 | 14.4 |
| 20 x 4½ | 105,813 | 4.6 | 471,240 | 2.4 |
| 20 x 5 | 56,426 | 2.4 | 619,163 | 3.1 |
| 20 x 6 | 13,349 | 0.6 | 92,523 | 0.5 |
| 21" Balloons | | | | |
| 21 x 2.75 | 428,444 | 18.5 | 4,673,590 | 23.6 |
| 21 x 3½ | 105,292 | 4.5 | 707,983 | 3.6 |
| 21 x 4 | 28,341 | 1.2 | 488,563 | 2.5 |
| 21 x 4½ | 6,864 | 0.3 | 267,329 | 1.4 |
| 21 x 5 | 1,358 | 0.1 | 8,598 | 0.0 |
| 21 x 6 | ..... | ... | 4,233 | 0.0 |
| 22" Balloons | | | | |
| 22 x 3½ | ..... | ... | 1,775 | 0.0 |
| 22 x 4 | ..... | ... | 3,197 | 0.0 |
| 22 x 4½ | ..... | ... | 2,440 | 0.0 |
| High Pressure | | | | |
| 30 x 3½-23 | 6,769 | 0.3 | 54,305 | 0.3 |
| 31 x 4- 23 | ..... | ... | 640 | 0.0 |
| 32 x 4½-23 | 18,763 | 0.8 | 78,321 | 0.4 |
| 32 x 4- 24 | 16,501 | 0.7 | 75,078 | 0.4 |
| 33 x 4½-24 | ..... | ... | 2,316 | 0.0 |
| 32 x 3½-25 | ..... | ... | 50 | 0.0 |
| 33 x 4 -25 | ..... | ... | 2,198 | 0.0 |
| 34 x 4½-25 | 428 | 0.0 | 6,377 | 0.0 |
| 20" Truck | | | | |
| 30 x 5 | 324,489 | 14.0 | 1,698,659 | 8.6 |
| 32 x 6 | 35,931 | 1.6 | 350,735 | 1.8 |
| 34 x 7 | 6,695 | 0.3 | 96,934 | 0.5 |
| 36 x 8 | 5,532 | 0.2 | 57,300 | 0.3 |
| 40 x 10 | ..... | ... | 4,241 | 0.0 |
| 22" Truck | | | | |
| 36 x 7 | ..... | ... | 8,987 | 0.0 |
| 38 x 8 | 529 | 0.0 | 729 | 0.0 |
| 24" Truck | | | | |
| 34 x 5 | 94 | 0.0 | 14,581 | 0.1 |
| 36 x 6 | 1,608 | 0.1 | 35,266 | 0.2 |
| 38 x 7 | 571 | 0.0 | 41,849 | 0.2 |
| 40 x 8 | 978 | 0.0 | 24,816 | 0.1 |
| 44 x 10 | ..... | ... | 796 | 0.0 |
| Airplane | | | | |
| 8 x 3 SS | 40 | 0.0 | 82 | 0.0 |
| 12 x 3 SS | 34 | 0.0 | 107 | 0.0 |
| 18 x 3 SS | 13 | 0.0 | 471 | 0.0 |
| 20 x 3 SS | ..... | ... | 6 | 0.0 |
| 20 x 3½ SS | 36 | 0.0 | 1,588 | 0.0 |
| 20 x 4 SS | 2 | 0.0 | 750 | 0.0 |
| 21 x 4 SS | ..... | ... | 21 | 0.0 |
| 20 x 5 SS | 22 | 0.0 | 98 | 0.0 |
| 20 x 6 SS | 20 | 0.0 | 2,311 | 0.0 |
| 20 x 8 SS | 6 | 0.0 | 6 | 0.0 |
| 24 x 10 SS | ..... | ... | 53 | 0.0 |
| 18 x 4 Cl | 381 | 0.0 | 9,342 | 0.0 |
| Totals | 2,315,604 | ... | 19,818,233 | ... |

# Cotton and Fabrics

AMERICAN COTTON. The price of middling spot cotton on October 1 was 19.45 cents compared with 19.10 cents on September 1. During the first week of October a rapid decline in spot took place, the price settling to 19.05 cents on the sixth. From that date on the trend was upward due to publication of the government crop report issued October 8. The report indicated a crop of 13,993,000 bales or only 64,000 bales below the average of the private reports issued previously.

The second week closed on the 13th and the price had risen to 19.55 cents. On the 16th the advance reached 20.20 cents from which point it fell off to 20.05 cents on the 18th, at which level it held for the remainder of the week. On October 25 the price was 19.55 cents.

EGYPTIAN COTTON. During the past month the basis on all staple cottons up to 1 1/16 inch has remained extraordinarily cheap and until the crop movement ceases there is very little prospect of much change. Egyptian Uppers are slightly firmer on good spinning buying, but American staples show no sign of improvement. Egyptian Sakels and Pimas are firm and relatively are not nearly so cheap as the shorter cottons. If the spinners of the world should use as much Sakel cotton this year as they did last, the world supply in existence and in prospect would probably be exhausted before the end of the summer of 1929.

## Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. The outstanding feature of the market is an increasing demand for both nearby and future delivery on all of these goods. Also an inclination to move through the first quarter of 1929 and in some cases into the second quarter. The opinion is held in well informed textile circles that the matter of readily available supplies, rather than fractions in price, will be the point of interest in negotiations. The situation in general is tightening on cotton fabrics.

RAINCOAT FABRICS. Trench coats and leatherettes are the most popular raincoats for the current season and fabrics suitable for them are in very active demand.

TIRE FABRICS. Conditions in the tire fabric market have materially improved in the past sixty days. All the best mills are reported sold to capacity up to the first of the year and have a good volume of business dated for delivery in the new year. Under these conditions prices have naturally experienced some advance and goods are still in active demand.

## Netherland Producers Adopt Watchful Waiting Policy

At the meeting held September 5, in Amsterdam, Netherland producers decided to take no action relating either to restriction of production or to consultation with American consumers to effect a working agreement looking towards stabilization of rubber prices. The meeting, by a considerable majority, decided to adopt an attitude of watchful waiting and to permanently continue the existence of the so-called Committee of Seven. This action apparently means that until after November 1, further activities of Netherland producers are not to be expected.

### New York Quotations
October 25, 1928

**Drills**

| | | |
|---|---|---|
| 38-inch | 2.00-yard.....yard | $0.17½ @ |
| 40-inch | 3.47-yard..... | .10¾ @ |
| 50-inch | 1.52-yard..... | .24½ @ |
| 52-inch | 1.90-yard..... | .19½ @ |
| 52-inch | 2.20-yard..... | .17¼ @ |
| 59-inch | 1.85-yard..... | .20½ @ |

**Ducks**

| | | |
|---|---|---|
| 38-inch | 2.00-yard D. F.yard | .18¼ @ |
| 40-inch | 1.45-yard S. F..... | .24½ @ |
| 72-inch | 1.05-yard D. F..... | .37½ @ |
| 72-inch | 16.66-ounce..... | .40½ @ |
| 72-inch | 17.21-ounce..... | .41⅞ @ |

**MECHANICAL**

| | | |
|---|---|---|
| Hose and belting....pound | | .33 @ |
| Specials ..... | | .37 @ |

**TENNIS**

| | | |
|---|---|---|
| 52-inch | 1.35-yard .....yard | .27½ @ |

**Hollands**

**RUBBER TRADE SPECIAL**

RT6B

| | | |
|---|---|---|
| 31-inch | .....yard | .16 @ |
| 40-inch | ..... | .20 @ |

**RED SEAL**

| | | |
|---|---|---|
| 36-inch | ..... | .15½ @ |
| 40-inch | ..... | .16½ @ |
| 50-inch | ..... | .25 @ |

**GOLD SEAL**

| | | |
|---|---|---|
| 40-inch, No. 72..... | | .20¼ @ |
| 40-inch, No. 80..... | | .22 @ |

**Osnaburgs**

| | | |
|---|---|---|
| 40-inch | 2.35-yard .....yard | $0.15¼ @ |
| 40-inch | 2.48-yard ..... | .14½ @ |
| 40-inch | 3.00-yard ..... | .12 @ |
| 40-inch | 10-oz. part waste..lb. | .19½ @ |
| 37-inch | 2.42-yard ..... | .14¾ @ |

**Raincoat Fabrics**

**COTTON**

| | | |
|---|---|---|
| Bombazine 64 x 60....yard | | .11 @ |
| Bombazine 60 x 48..... | | .10 @ |
| Plaids 60 x 48..... | | .12¼ @ |
| Plaids 48 x 48..... | | .11½ @ |
| Surface prints 64 x 60..... | | .13¾ @ |
| Surface prints 60 x 48..... | | .12¾ @ |
| Print cloth 38½-in., 60 x 48. | | .06¾ @ |

**Sheetings, 40-inch**

| | | |
|---|---|---|
| 48 x 48, 2.50-yard.....yard | .13 @ | .12¾ |
| 48 x 48, 2.85-yard..... | .11¼ @ | |
| 64 x 68, 3.15-yard..... | .11⅞ @ | .12 |
| 56 x 60, 3.60-yard..... | .09¾ @ | .09⅞ |
| 44 x 48, 3.75-yard..... | .08⅝ @ | .08¾ |

**Sheetings, 36-inch**

| | | |
|---|---|---|
| 48 x 48, 5.00 yard.....yard | .07 @ | |
| 40 x 44, 6.15-yard..... | .05¾ @ | .05¾ |

**Tire Fabrics**

**SQUARE WOVEN 17¼-ounce**

| | | |
|---|---|---|
| Peeler, karded.....pound | $0.49 @ | |

**BUILDER 23/11**

| | | |
|---|---|---|
| Peeler, karded.....pound | .48½ @ | .49 |

**BUILDER 10/5**

| | | |
|---|---|---|
| Peeler, karded.....pound | .45½ @ | .46 |

**CORD 23/5/3**

| | | |
|---|---|---|
| Peeler, karded, 1 1/16-in..pound | .48½ @ | .49 |

**CORD 23/4/3**

| | | |
|---|---|---|
| Peeler, karded.....pound | .49½ @ | .50 |

**CORD 23/3/3**

| | | |
|---|---|---|
| Peeler, karded.....pound | .50½ @ | |

**CORD 13/3/3**

| | | |
|---|---|---|
| Peeler, karded.....pound | .46½ @ | .47 |

**CORD 13/3/3**

| | | |
|---|---|---|
| Peeler, karded.....pound | .45½ @ | .46 |

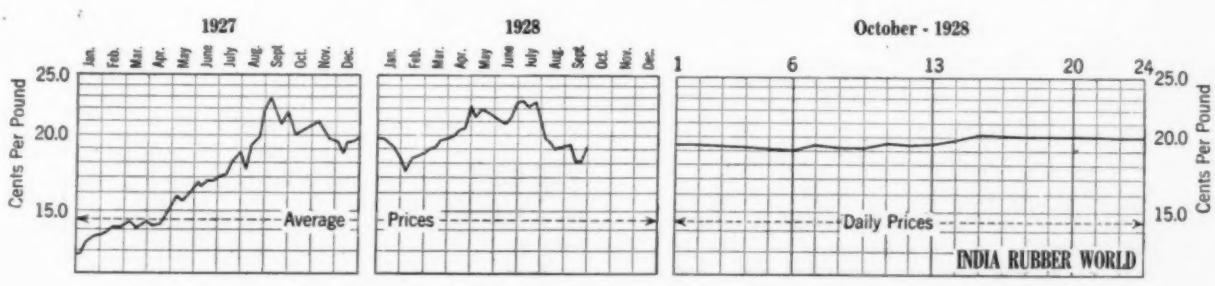
**LENO BREAKER**

| | | |
|---|---|---|
| 8-oz. Peeler, karded..pound | .48½ @ | |
| 10-oz. Peeler, karded..... | .48½ @ | |

**CHAFER**

| | | |
|---|---|---|
| 9.5-oz. Peeler, karded.pound | .52 @ | |
| 12-oz. Peeler, karded..... | .53 @ | |
| 14-oz. Peeler, karded..... | .48½ @ | |

## Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton



# United States Statistics

## IMPORTS OF CRUDE AND MANUFACTURED RUBBER

| | July, 1928 | | Seven Months Ended July, 1928 | |
|---|---|---|---|---|
| UNMANUFACTURED—*Free* | Pounds | Value | Pounds | Value |
| Crude rubber | 70,017,674 | $14,144,765 | 540,728,282 | $164,757,063 |
| Balata | 275,577 | 46,747 | 761,664 | 197,987 |
| Jelutong or Pontianak | 836,200 | 113,295 | 8,407,165 | 1,317,814 |
| Gutta percha | 181,668 | 27,344 | 1,914,173 | 469,727 |
| Guayule | 427,900 | 100,342 | 6,890,852 | 1,755,529 |
| Rubber scrap | 1,114,988 | 36,310 | 11,303,229 | 433,040 |
| Totals | 72,854,007 | $14,468,803 | 570,005,365 | $168,931,160 |
| Chicle *dutiable* | 307,917 | $150,984 | 9,241,197 | $4,714,775 |
| MANUFACTURED—*Dutiable* | | | | |
| Rubber belting | 27,650 | $16,643 | 301,037 | $170,187 |
| Rubber tires | 101 | 1,772 | 3,016 | 59,384 |
| Other manufactures of rubber | ..... | 124,402 | ..... | 929,400 |
| Totals | 27,751 | $142,817 | 304,053 | $1,158,971 |

## EXPORTS OF FOREIGN MERCHANDISE

| | | | | |
|---|---|---|---|---|
| RUBBER MANUFACTURES | | | | |
| Crude rubber | 6,914,962 | $1,451,446 | 42,164,364 | $12,205,487 |
| Balata | 18,821 | 7,715 | 167,635 | 67,114 |
| Gutta percha, rubber substitutes and scrap | 15,700 | 3,083 | 135,424 | 17,023 |
| Rubber manufactures | ..... | 25,034 | ..... | 316,279 |
| Totals | 6,949,483 | $1,487,278 | 42,467,423 | $12,605,903 |

## EXPORTS OF DOMESTIC MERCHANDISE

| | | | | |
|---|---|---|---|---|
| MANUFACTURED | | | | |
| Reclaimed | 2,208,211 | $154,672 | 12,575,901 | $995,922 |
| Scrap and old | 3,498,035 | 176,760 | 26,048,505 | 1,426,046 |
| Rubberized piece goods and hospital sheeting *sq. yd.* | 139,344 | 68,352 | 1,116,447 | 548,058 |
| Footwear | | | | |
| Boots *pairs* | 133,190 | 322,242 | 489,683 | 1,204,052 |
| Shoes *pairs* | 245,304 | 271,967 | 1,057,018 | 967,175 |
| Canvas shoes with rubber soles *pairs* | 489,802 | 346,012 | 3,185,445 | 2,287,111 |
| Rubber water bottles and fountain syringes *number* | 47,057 | 34,559 | 193,669 | 128,612 |
| Rubber gloves *doz. pairs* | 8,287 | 24,854 | 61,065 | 161,266 |
| Other druggists' rubber sundries | ..... | 52,555 | ..... | 243,449 |
| Rubber balloons *gross* | 45,750 | 58,004 | 333,504 | 393,192 |
| Rubber toys and balls | ..... | 20,184 | ..... | 112,012 |
| Bathing caps *doz.* | 13,619 | 34,356 | 132,157 | 297,725 |
| Hard rubber goods | | | | |
| Electrical hard rubber goods | 196,802 | 36,197 | 868,298 | 181,361 |
| Other hard rubber goods | ..... | 28,515 | ..... | 201,975 |
| Tires | | | | |
| Casings, automobile *number* | 191,037 | 2,369,983 | 1,412,849 | 17,941,494 |
| Tubes, automobile *number* | 111,789 | 245,866 | 917,212 | 1,991,689 |
| Other casings and tubes *number* | 2,659 | 7,811 | 31,259 | 66,512 |
| Solid tires for automobiles and motor trucks *number* | 4,472 | 151,962 | 31,999 | 1,122,473 |
| Others | 99,371 | 24,837 | 1,169,160 | 268,477 |
| Tire accessories | ..... | 128,574 | ..... | 1,022,909 |
| Rubber and friction tape | 179,791 | 49,792 | 902,723 | 275,601 |
| Belting | 363,011 | 222,849 | 2,834,116 | 1,618,456 |
| Hose | 609,675 | 240,282 | 4,244,833 | 1,558,885 |
| Packing | 198,806 | 104,231 | 1,679,729 | 759,290 |
| Soles and heels | 100,833 | 109,590 | 869,860 | 1,288,724 |
| Thread | 132,526 | 141,253 | 921,947 | 1,028,609 |
| Rubber bands and erasers | 73,765 | 47,504 | 543,194 | 370,353 |
| Other rubber manufactures | ..... | 236,356 | ..... | 1,504,288 |
| Totals | ..... | $5,710,119 | ..... | $39,965,716 |

## Crude Rubber Imports by Customs Districts

| | *August, 1928 | | Eight Months Ended *August, 1928 | |
|---|---|---|---|---|
| | Pounds | Value | Pounds | Value |
| Massachusetts | 1,735,705 | $299,888 | 27,927,344 | $8,086,510 |
| Buffalo | ..... | ..... | 12,060 | 2,290 |
| New York | 62,567,409 | 11,584,442 | 517,191,021 | 148,924,629 |
| Philadelphia | ..... | ..... | 21,046,752 | 7,230,340 |
| Maryland | 972,860 | 171,707 | 19,341,882 | 6,122,728 |
| Los Angeles | 3,511,187 | 604,221 | 19,985,620 | 5,687,260 |
| San Francisco | 175,115 | 36,915 | 915,704 | 247,648 |
| Oregon | ..... | ..... | 105,535 | 33,556 |
| Michigan | ..... | ..... | 33,600 | 10,080 |
| Ohio | 49,129 | 8,886 | 2,697,190 | 892,202 |
| St. Louis | ..... | ..... | 280,000 | 110,749 |
| Wisconsin | ..... | ..... | 56,000 | 21,982 |
| Colorado | 145,600 | 24,513 | 517,200 | 133,075 |
| Totals | 69,157,005 | $12,730,572 | 610,109,908 | $177,503,049 |

*Including latex, dry rubber content.

*The effect of temperature on tread wear as experienced in hot and cold weather is clearly demonstrated in the tests described in the article on page 64 of this issue by Somerville and Cope.*

# Dominion of Canada Statistics

## IMPORTS OF CRUDE AND MANUFACTURED RUBBER

| | June, 1928 | | Three Months Ended June, 1928 | |
|---|---|---|---|---|
| UNMANUFACTURED | Pounds | Value | Pounds | Value |
| Rubber, gutta percha, etc. | 5,896,765 | $1,663,857 | 15,120,259 | $4,028,069 |
| Rubber recovered | 1,174,200 | 85,982 | 3,983,000 | 295,287 |
| Rubber and gutta percha scrap | 800,100 | 48,269 | 2,304,200 | 100,589 |
| Balata | ..... | ..... | 532 | 192 |
| Rubber substitutes | 59,900 | 12,298 | 123,500 | 25,374 |
| Totals | 7,930,965 | $1,810,406 | 21,531,491 | $4,449,511 |
| PARTLY MANUFACTURED | | | | |
| Hard rubber sheets and rods | 26,929 | $6,570 | 57,423 | $17,246 |
| Hard rubber tubes | ..... | ..... | ..... | 2,738 |
| Rubber thread not covered | 25,310 | 29,131 | 46,620 | 54,417 |
| Totals | 52,239 | $35,701 | 104,043 | $74,401 |
| MANUFACTURED | | | | |
| Belting | ..... | $19,891 | ..... | $44,228 |
| Hose | .... | 24,034 | ..... | 60,777 |
| Packing | ..... | 4,935 | ..... | 17,046 |
| Boots and shoes *pairs* | 4,644 | 6,206 | 20,141 | 14,765 |
| Clothing, including waterproofed | ..... | 64,632 | ..... | 182,955 |
| Gloves | ..... | 1,640 | ..... | 4,895 |
| Hot water bottles | ..... | 909 | ..... | 3,018 |
| Tires, solid *number* | 48 | 3,637 | 247 | 10,158 |
| Tires, pneumatic *number* | 7,273 | 27,348 | 16,755 | 76,260 |
| Tires, tubes *number* | 4,868 | 6,098 | 16,434 | 21,775 |
| Mats and matting | ..... | 11,651 | ..... | 29,850 |
| Cement | ..... | 4,982 | ..... | 14,528 |
| Golf balls *dozen* | 3,368 | 11,758 | 19,265 | 77,491 |
| Heels, rubber *pairs* | 181,561 | 7,825 | 419,671 | 21,655 |
| Other rubber manufactures | ..... | 134,958 | ..... | 400,414 |
| Totals | ..... | $330,504 | ..... | $979,815 |
| Totals, rubber imports | ..... | $2,176,611 | ..... | $5,503,727 |

## EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS

| | Produce of Canada | Re-exports of Foreign Goods | Produce of Canada | Re-exports of Foreign Goods |
|---|---|---|---|---|
| UNMANUFACTURED | Value | Value | Value | Value |
| Waste rubber | $16,573 | ..... | $44,315 | ..... |
| Totals | $16,573 | ..... | $44,315 | ..... |
| MANUFACTURED | | | | |
| Belting | $29,990 | ..... | $122,753 | ..... |
| Canvas shoes with rubber soles | 562,196 | ..... | 1,328,121 | ..... |
| Boots and shoes | 215,917 | ..... | 398,976 | ..... |
| Clothing, including waterproofed | 4,612 | ..... | 10,968 | ..... |
| Hose | 17,341 | ..... | 53,756 | ..... |
| Tires, casings | 1,399,771 | ..... | 3,601,638 | ..... |
| Inner tubes | 220,706 | ..... | 572,319 | ..... |
| Solid | 33,327 | ..... | 90,284 | ..... |
| Other rubber manufactures | 79,850 | $14,956 | 351,910 | $19,356 |
| Totals | $2,563,710 | $14,956 | $6,530,725 | $19,356 |
| Totals, rubber exports | $2,580,283 | $14,956 | $6,575,040 | $19,356 |

# British Malaya

## RUBBER EXPORTS

An official cablegram from Singapore to the Malay States Information Agency, Malaya House, 57 Charing Cross, London, S. W. 1, England, states that the amount of rubber exported from British Malaya in September last totaled 29,700 tons. The amount of rubber imported was 11,239 tons, of which 8,430 tons were declared as wet rubber. The following are comparative statistics:

| | 1927 | | 1928 | |
|---|---|---|---|---|
| | Gross Exports Tons | Foreign Imports Tons | Gross Exports Tons | Foreign Imports Tons |
| January | 34,946 | 14,995 | 27,731 | 16,618 |
| February | 27,528 | 11,697 | 28,813 | 12,911 |
| March | 41,346 | 17,462 | 27,813 | 10,508 |
| April | 29,041 | 13,069 | 20,029 | 9,335 |
| May | 31,393 | 15,491 | 26,403 | 10,350 |
| June | 32,607 | 14,706 | 22,930 | 16,168 |
| July | 23,947 | 12,697 | 30,405 | 13,383 |
| August | 30,371 | 17,105 | 35,593 | 15,114 |
| September | 29,835 | 12,095 | 29,700 | 11,239 |
| Totals | 281,014 | 129,317 | 249,417 | 115,626 |

The above figures represent the totals compiled from declarations received up to the last day of the month for export from and import to all ports of British Malaya and not necessarily the actual quantity shipped or landed during that month.

### DISTRIBUTION

The following is a comparative return of distribution of shipments during the months of August and September, 1928.

| | August, 1928 Tons | September, 1928 Tons |
|---|---|---|
| United Kingdom | 5,963 | 2,883 |
| United States | 24,842 | 21,104 |
| Continent of Europe | 2,552 | 2,338 |
| British Possessions | 591 | 467 |
| Japan | 1,590 | 2,863 |
| Other foreign countries | 55 | 45 |
| Totals | 35,593 | 29,700 |

# United Kingdom Statistics

IMPORTS

| | August, 1928 | | Eight Months Ended August, 1928 | |
|---|---|---|---|---|
| UNMANUFACTURED | Pounds | Value | Pounds | Value |
| Crude Rubber | | | | |
| From— | | | | |
| Straits Settlements | 5,620,900 | £224,438 | 56,660,400 | £2,926,185 |
| Federated Malay States | 2,352,600 | 95,698 | 29,095,400 | 1,479,541 |
| British India | 1,470,800 | 59,212 | 9,990,900 | 546,034 |
| Ceylon and Dependencies | 2,802,100 | 112,605 | 19,475,700 | 1,032,047 |
| Other Dutch possessions in Indian Seas | 1,873,600 | 77,720 | 16,271,800 | 881,719 |
| Dutch East Indies (except Other Dutch possessions in Indian Seas) | 2,198,700 | 87,497 | 18,331,600 | 973,693 |
| Other countries in East Indies and Pacific not elsewhere specified | 296,800 | 12,236 | 2,412,900 | 123,467 |
| Brazil | 553,300 | 23,914 | 3,262,500 | 164,490 |
| South and Central America (except Brazil) | 52,000 | 2,558 | 226,200 | 11,432 |
| West Africa | | | | |
| French West Africa | ..... | ..... | 89,100 | 3,752 |
| Gold Coast | 29,900 | 1,197 | 362,900 | 18,662 |
| Other parts of West Africa | 54,200 | 2,096 | 1,200,700 | 60,312 |
| East Africa, including Madagascar | 129,100 | 5,026 | 911,200 | 47,302 |
| Other countries | 66,200 | 3,020 | 1,145,900 | 56,457 |
| Totals | 17,500,200 | £707,217 | 159,437,200 | £8,325,093 |
| Gutta percha and balata | 104,200 | 11,352 | 2,171,900 | 183,218 |
| Waste and reclaimed rubber | 838,500 | 10,030 | 6,108,800 | 80,006 |
| Rubber substitutes | ..... | ..... | 15,000 | 447 |
| Totals | 18,442,900 | £728,599 | 167,732,900 | £8,588,764 |
| MANUFACTURED | | | | |
| *†‡Tires and tubes | | | | |
| Pneumatic | | | | |
| Outer covers | ..... | £87,271 | ..... | £563,098 |
| Inner tubes | ..... | 14,694 | ..... | 110,433 |
| Solid tires | ..... | 8,667 | ..... | 46,175 |
| Boots and shoes...*doz. pairs* | 81,273 | 231,598 | 589,693 | 1,073,620 |
| Other rubber manufactures | ..... | 131,150 | ..... | 1,231,280 |
| Totals | ..... | £473,380 | ..... | £3,024,606 |

EXPORTS

| | | | | |
|---|---|---|---|---|
| UNMANUFACTURED | | | | |
| Waste and reclaimed rubber | 2,826,600 | £14,920 | 20,377,700 | £158,169 |
| Rubber substitutes | 34,900 | 883 | 363,800 | 8,880 |
| Totals | 2,861,500 | £15,803 | 20,741,500 | £167,049 |
| MANUFACTURED | | | | |
| ‡Tires and tubes | | | | |
| Pneumatic | | | | |
| Outer covers | ..... | £209,618 | ..... | £1,726,509 |
| Inner tubes | ..... | 31,991 | ..... | 295,199 |
| Solid tires | ..... | 17,764 | ..... | 158,413 |
| Boots and shoes...*doz. pairs* | 24,693 | 40,175 | 182,672 | 291,480 |
| Other rubber manufactures | ..... | 230,700 | ..... | 2,077,886 |
| Totals | ..... | £530,248 | ..... | £4,549,487 |

EXPORTS—COLONIAL AND FOREIGN

| | | | | |
|---|---|---|---|---|
| UNMANUFACTURED | | | | |
| Crude Rubber | | | | |
| To— | | | | |
| Russia | 11,100 | £450 | 7,424,400 | £491,931 |
| Sweden, Norway and Denmark | 256,600 | 14,635 | 2,063,700 | 129,572 |
| Germany | 1,854,600 | 70,781 | 26,392,600 | 1,540,769 |
| Belgium | 884,600 | 38,508 | 6,732,000 | 389,768 |
| France | 2,969,000 | 125,585 | 23,768,000 | 1,307,475 |
| Spain | 36,300 | 2,386 | 1,447,000 | 98,239 |
| Italy | 1,600,100 | 64,052 | 11,433,200 | 619,803 |
| Other European countries | 444,500 | 21,902 | 3,288,700 | 231,141 |
| United States | 9,027,400 | 353,845 | 84,011,000 | 5,120,481 |
| Canada | 23,200 | 890 | 39,000 | 1,888 |
| Other countries | 285,000 | 23,207 | 1,162,400 | 86,447 |
| Totals | 17,392,400 | £716,241 | 167,762,000 | £10,017,514 |
| Gutta percha and balata | 55,300 | 2,955 | 574,900 | 44,731 |
| Waste and reclaimed rubber | 27,400 | 580 | 191,700 | 3,769 |
| Rubber substitutes | ..... | ..... | 3,700 | 194 |
| Totals | 17,475,100 | £719,776 | 168,532,300 | £10,066,208 |
| MANUFACTURED | | | | |
| *‡Tires and tubes | | | | |
| Pneumatic | | | | |
| Outer covers | ..... | £12,207 | ..... | £111,204 |
| Inner tubes | ..... | 1,090 | ..... | 21,959 |
| Solid tires | ..... | 96 | ..... | 2,189 |
| Boots and shoes...*doz. pairs* | 861 | 1,912 | 9,293 | 16,475 |
| Other rubber manufactures | ..... | 8,460 | ..... | 91,829 |
| Totals | ..... | £23,765 | ..... | £243,656 |

*After April 12, 1927, tires and tubes imported or exported with complete vehicles or chassis, or fitted to wheels imported separately, are included under complete vehicles or parts.

†Motor cars, motorcycles, parts and accessories, liable to duty from September 29, 1915, until August 1, 1924, inclusive, and after July 1, 1925. Commercial vehicles, parts and accessories were exempt from duty until April 30, 1926, inclusive, and rubber tires and tubes until April 11, 1927, inclusive.

‡Tires and tubes included prior to April 12, 1927.

# Tire Production Statistics

| | High Pressure Pneumatic Casings | | | | | |
|---|---|---|---|---|---|---|
| | Cord | | | Fabric | | |
| | Inventory | Production | Total Shipments | Inventory | Production | Total Shipments |
| 1927 | ..... | 21,527,278 | 21,733,962 | ..... | 766,581 | 1,198,549 |
| 1928 | | | | | | |
| January | 3,605,064 | 1,684,750 | 1,496,047 | 200,322 | 56,218 | 60,404 |
| February | 4,394,561 | 1,697,498 | 1,244,812 | 222,655 | 53,220 | 28,719 |
| March | 4,355,309 | 1,564,346 | 1,302,644 | 235,673 | 33,168 | 28,431 |
| April | 4,331,499 | 1,307,759 | 1,347,854 | 223,274 | 16,198 | 27,523 |
| May | 4,152,775 | 1,404,097 | 1,570,710 | 195,886 | 6,787 | 36,567 |
| June | 3,362,861 | 1,345,857 | 1,812,907 | 171,349 | 15,107 | 38,401 |
| July | 3,039,349 | 1,506,228 | 2,207,086 | 113,678 | 9,285 | 58,434 |
| August | 2,465,358* | 1,903,345 | 2,416,386 | 62,132* | 20,372 | 71,856 |

| | High Pressure Inner Tubes | | | Balloon Inner Tubes | | |
|---|---|---|---|---|---|---|
| | Inventory | Production | Total Shipments | Inventory | Production | Total Shipments |
| 1927 | ..... | 27,398,535 | 29,528,108 | ..... | 25,718,529 | 25,143,821 |
| 1928 | | | | | | |
| January | 5,328,071 | 1,669,894 | 2,014,744 | 4,408,235 | 2,411,124 | 2,539,535 |
| February | 5,941,626 | 1,949,539 | 1,470,668 | 5,046,021 | 3,221,756 | 2,602,362 |
| March | 6,071,983 | 1,740,238 | 1,442,162 | 5,782,551 | 3,683,017 | 2,856,342 |
| April | 6,044,843 | 1,628,576 | 1,459,826 | 6,434,307 | 3,366,957 | 2,815,778 |
| May | 6,220,912 | 1,680,621 | 1,713,411 | 7,055,801 | 3,695,296 | 3,011,432 |
| June | 5,558,455 | 1,661,897 | 2,168,337 | 7,311,204 | 3,553,191 | 3,184,056 |
| July | 4,435,798 | 1,764,761 | 2,970,017 | 6,794,803 | 3,240,455 | 3,576,465 |
| August | 3,833,201* | 2,783,115 | 3,357,277 | 6,614,884* | 3,474,338 | 3,655,301 |

| | Balloon Casings | | | Solid and Cushion Tires | | |
|---|---|---|---|---|---|---|
| | Inventory | Production | Total Shipments | Inventory | Production | Total Shipments |
| 1927 | ..... | 26,037,452 | 25,111,903 | ..... | 558,030 | 558,007 |
| 1928 | | | | | | |
| January | 3,656,537 | 2,377,299 | 2,489,391 | 161,329 | 36,279 | 33,797 |
| February | 4,173,493 | 3,021,548 | 2,500,013 | 156,790 | 36,328 | 38,715 |
| March | 4,700,534 | 3,516,480 | 2,967,476 | 156,424 | 42,950 | 44,665 |
| April | 4,983,023 | 3,309,351 | 2,983,454 | 154,477 | 43,255 | 42,145 |
| May | 5,419,093 | 3,658,349 | 3,235,236 | 153,205 | 46,606 | 47,604 |
| June | 5,587,566 | 3,658,508 | 3,486,748 | 153,925 | 48,614 | 48,426 |
| July | 5,215,331 | 3,358,203 | 3,658,636 | 150,770 | 45,792 | 48,081 |
| August | 4,986,800* | 3,678,139 | 3,814,016 | 147,350* | 51,679 | 52,334 |

| | Cotton and Rubber Consumption Casings, Tubes, Solid and Cushion Tires | |
|---|---|---|
| | Cotton Fabric Pounds | Crude Rubber Pounds |
| 1927 | 177,979,818 | 463,661,466 |
| 1928 | | |
| January | 16,039,819 | 43,709,438 |
| February | 16,923,607 | 46,468,050 |
| March | 18,853,824 | 48,897,275 |
| April | 18,310,791 | 43,700,630 |
| May | 19,167,606 | 51,061,030 |
| June | 19,646,494 | 53,158,592 |
| July | 20,947,405 | 47,128,308 |
| August | 21,853,756 | 62,224,046 |

*As of August 31, 1928.

*Rubber Association figures representing 75 per cent of the industry.*

## London Stocks, July and August, 1928

| | Landed for July | Delivered for July | Stocked July 31 | | |
|---|---|---|---|---|---|
| LONDON | Tons | Tons | 1928 Tons | 1927 Tons | 1926 Tons |
| Plantation | 5,277 | 8,601 | 35,314 | 63,528 | 27,504 |
| Other grades | 75 | 75 | 84 | 122 | 172 |
| LIVERPOOL | | | | | |
| Plantation | †617 | †563 | †2,389 | †3,059 | †1,190 |
| Total tons, London and Liverpool | 5,969 | 9,239 | 37,787 | 66,709 | 28,866 |

| | Landed for Aug. | Delivered for Aug. | Stocked August 31 | | |
|---|---|---|---|---|---|
| LONDON | Tons | Tons | 1928 Tons | 1927 Tons | 1026 Tons |
| Plantation | 6,033 | 9,375 | 31,972 | 64,281 | 29,925 |
| Other grades | 2 | 1 | 85 | 146 | 167 |
| LIVERPOOL | | | | | |
| Plantation | †342 | †451 | †2,280 | †3,345 | †1,219 |
| Total tons, London and Liverpool | 6,377 | 9,827 | 34,337 | 67,772 | 31,311 |

†Official returns from the six recognized public warehouses.

## National Power Show

The Seventh National Exposition of Power and Mechanical Engineering will be held December 3-8, 1928, at the Grand Central Palace, New York, N. Y., during the annual convention of the American Society of Mechanical Engineers.

# Crude Rubber Arrivals at New York as Reported by Importers

## Plantations

| | Cases |
|---|---|
| **Sept. 15. By "City of Durban," Far East.** | |
| H. A. Astlett & Co. | 322 |
| General Rubber Co. | 100 |
| H. Muehlstein & Co., Inc. | 350 |
| Poel & Kelly, Inc. | 15 |
| **Sept. 15. By "City of Shanghai," Far East.** | |
| General Rubber Co. | 2,416 |
| Lavino American & Asiatic Co. | 162 |
| The Meyer & Brown Corp. | 400 |
| **Sept. 15. By "Mahseer," Far East.** | |
| H. A. Astlett & Co. | 854 |
| General Rubber Co. | 2,222 |
| Lavino American & Asiatic Co. | 100 |
| The Meyer & Brown Corp. | 350 |
| H. Muehlstein & Co., Inc. | 700 |
| **Sept. 15. By "Saleier," Far East.** | |
| H. A. Astlett & Co. | 576 |
| Robert Badenhop Corp. | 232 |
| General Rubber Co. | 2,994 |
| Lavino American & Asiatic Co. | 92 |
| The Meyer & Brown Corp. | 1,127 |
| Poel & Kelly, Inc. | 207 |
| **Sept. 17. By "Franconia," London.** | |
| Baird Rubber & Trading Co., Inc. | 211 |
| **Sept. 17. By "Minnetonka," London.** | |
| Bierrie & Co., Inc. | 104 |
| The Meyer & Brown Corp. | 512 |
| **Sept. 17. By "Pres. Garfield," Far East.** | |
| H. A. Astlett & Co. | 1,710 |
| Robert Badenhop Corp. | 650 |
| Bierrie & Co., Inc. | 200 |
| General Rubber Co. | 4,306 |
| Haldane & Co., Inc. | 1,900 |
| Hood Rubber Co. | *256 |
| Lavino American & Asiatic Co. | 865 |
| Littlejohn & Co., Inc. | 2,846 |
| The Meyer & Brown Corp. | 873 |
| H. Muehlstein & Co., Inc. | 1,500 |
| Poel & Kelly, Inc. | 500 |
| Chas. T. Wilson Co., Inc. | 446 |
| **Sept. 18. By "American Merchant," London.** | |
| Baird Rubber & Trading Co., Inc. | 222 |
| The Meyer & Brown Corp. | 514 |
| **Sept. 19. By "Maryland," London.** | |
| Baird Rubber & Trading Co., Inc. | *357 |
| **Sept. 22. By "Bloomersdyck," Far East.** | |
| H. Muehlstein & Co., Inc. | 610 |
| **Sept. 22. By "Dardanus," Far East.** | |
| H. A. Astlett & Co. | 4,069 |
| Robert Badenhop Corp. | 200 |
| Baird Rubber & Trading Co., Inc. | 10 |
| Bierrie & Co., Inc. | 56 |
| General Rubber Co. | 4,890 |
| Haldane & Co., Inc. | 1,074 |
| Hood Rubber Co. | *213 |
| Lavino American & Asiatic Co. | 1,683 |
| Littlejohn & Co., Inc. | 6,161 |
| The Meyer & Brown Corp. | 1,761 |
| Poel & Kelly, Inc. | 2,755 |
| Poel & Kelly, Inc. | *100 |
| Raw Products Co. | 100 |
| Rogers Brown & Crocker Bros., Inc. | 1,474 |
| Chas. T. Wilson Co., Inc. | 248 |
| **Sept. 23. By "Caronia," London.** | |
| Bierrie & Co., Inc. | 162 |
| General Rubber Co. | 30 |
| Littlejohn & Co., Inc. | 206 |
| The Meyer & Brown Corp. | 256 |
| **Sept. 23. By "Pres. Jackson," Far East.** | |
| H. A. Astlett & Co. | †500 |
| Robert Badenhop.....bales | †180 |
| Littlejohn & Co., Inc. | †1,660 |
| The Meyer & Brown Corp. | †125 |
| H. Muehlstein & Co., Inc. | †200 |
| Poel & Kelly, Inc. | †200 |
| Rogers Brown & Crocker Bros., Inc. | †100 |
| **Sept. 24. By "City Osaka," Far East.** | |
| H. A. Astlett & Co. | 3,363 |
| Robert Badenhop Corp. | 1,110 |
| Bierrie & Co., Inc. | 150 |
| General Rubber Co. | 6,769 |
| Haldane & Co., Inc. | 1,738 |
| Hood Rubber Co. | *330 |
| Lavino American & Asiatic Co. | 1,506 |
| Littlejohn & Co., Inc. | 7,648 |
| The Meyer & Brown Corp. | 2,376 |
| The Meyer & Brown Corp. | *106 |
| H. Muehlstein & Co., Inc. | 150 |
| Poel & Kelly, Inc. | 1,709 |
| Rogers Brown & Crocker Bros., Inc. | 600 |
| Rogers Brown & Crocker Bros., Inc. | *100 |
| Chas. T. Wilson Co., Inc. | 200 |
| **Sept. 24. By "Forresbank," Far East.** | |
| H. A. Astlett & Co. | 2,302 |
| Robert Badenhop Corp. | 50 |
| Baird Rubber & Trading Co., Inc. | 40 |
| General Rubber Co. | 2,050 |
| Haldane & Co., Inc. | 320 |
| Lavino American & Asiatic Co. | 1,552 |
| Littlejohn & Co., Inc. | 2,115 |
| The Meyer & Brown Corp. | 298 |
| Rogers Brown & Crocker Bros., Inc. | 1,110 |
| Rogers Brown & Crocker Bros., Inc. | *100 |
| **Sept. 24. By "Laconia," London.** | |
| Bierrie & Co., Inc. | 138 |
| **Sept. 24. By "Minnekahda," London.** | |
| Baird Rubber & Trading Co., Inc. | 406 |
| Bierrie & Co., Inc. | 445 |
| N. Diamond & Co., Inc. | 250 |
| Littlejohn & Co., Inc. | 1,823 |
| The Meyer & Brown Corp. | 778 |
| Chas. T. Wilson Co., Inc. | 208 |
| **Sept. 24. By "Veendam," Far East.** | |
| N. Diamond & Co., Inc. | 47 |
| **Sept. 25. By "Silverbelle," Far East.** | |
| H. A. Astlett & Co. | 4,397 |
| Robert Badenhop Corp.....pkgs. | 1,374 |
| Bierrie & Co., Inc. | 185 |
| General Rubber Co. | 5,840 |
| Haldane & Co., Inc. | 929 |
| Lavino American & Asiatic Co. | 605 |
| Littlejohn & Co., Inc. | 8,192 |
| The Meyer & Brown Corp. | 1,693 |
| The Meyer & Brown Corp. | *50 |
| Poel & Kelly, Inc. | 900 |
| Rogers Brown & Crocker Bros., Inc. | 1,276 |
| Rogers Brown & Crocker Bros., Inc. | *100 |
| Chas. T. Wilson Co., Inc. | 348 |
| **Sept. 28. By "Malayan Prince," Far East.** | |
| H. A. Astlett & Co. | 4,189 |
| Robert Badenhop Corp.....pkgs. | 390 |
| Bierrie & Co., Inc. | 429 |
| General Rubber Co. | 8,651 |
| Haldane & Co., Inc. | 900 |
| Lavino American & Asiatic Co. | 1,410 |
| Littlejohn & Co., Inc. | 7,993 |
| The Meyer & Brown Corp. | 2,101 |
| Poel & Kelly, Inc. | 979 |
| Poel & Kelly, Inc. | *150 |
| Rogers Brown & Crocker Bros., Inc. | 1,095 |
| **Sept. 28. By "William Penn," Far East.** | |
| H. A. Astlett & Co. | 70 |
| Robert Badenhop Corp. | 200 |
| General Rubber Co. | 1,120 |
| Haldane & Co., Inc. | 150 |
| Hood Rubber Co. | 150 |
| Littlejohn & Co., Inc | 50 |
| H. Muehlstein & Co., Inc. | 500 |
| Rogers Brown & Crocker Bros., Inc. | 150 |
| Chas. T. Wilson Co., Inc. | 25 |
| **Sept. 30. By "American Trader," London.** | |
| Baird Rubber & Trading Co., Inc. | 511 |
| Poel & Kelly, Inc. | 507 |
| **Sept. 30. By "Carinthia," London.** | |
| Baird Rubber & Trading Co., Inc. | 70 |
| Bierrie & Co., Inc. | 138 |
| **Oct. 1. By "Minnewaska," London.** | |
| Baird Rubber & Trading Co., Inc. | 507 |
| Bierrie & Co., Inc. | 548 |
| General Rubber Co. | 50 |
| Haldane & Co., Inc. | 260 |
| **Oct. 1. By "Priam," Far East.** | |
| H. A. Astlett & Co. | 1,588 |
| Robert Badenhop Corp. | 300 |
| Bierrie & Co., Inc. | 137 |
| General Rubber Co. | 3,955 |
| Haldane & Co., Inc. | 486 |
| Lavino American & Asiatic Co. | 596 |
| Littlejohn & Co., Inc. | 1,194 |
| The Meyer & Brown Corp. | 1,825 |
| H. Muehlstein & Co., Inc. | 200 |
| Poel & Kelly, Inc. | 27 |
| Rogers Brown & Crocker Bros., Inc. | 231 |
| Rogers Brown & Crocker Bros., Inc. | *136 |
| Chas. T. Wilson Co., Inc. | 483 |
| **Oct. 1. By "Steel Worker," Far East.** | |
| General Rubber Co. | 330 |
| Littlejohn & Co., Inc. | 140 |
| The Meyer & Brown Corp. | 1,151 |
| H. Muehlstein & Co., Inc. | 250 |
| Chas. T. Wilson Co., Inc. | 141 |
| **Oct. 2. By "Mississippi," Far East.** | |
| Hood Rubber. | *262 |
| **Oct. 2. By "Pres. Harrison," Far East.** | |
| H. A. Astlett & Co. | 1,083 |
| Robert Badenhop Corp. | 160 |
| Bierrie & Co., Inc. | 50 |
| General Rubber Co. | 3,884 |
| Haldane & Co., Inc. | 950 |
| Hood Rubber Co. | *250 |
| Lavino American & Asiatic Co. | 1,107 |
| Littlejohn & Co., Inc. | 1,746 |
| The Meyer & Brown Corp. | 1,139 |
| Poel & Kelly, Inc. | 790 |
| Rogers Brown & Crocker Bros., Inc. | 1,750 |
| Rogers Brown & Crocker Bros., Inc. | *50 |
| Chas. T. Wilson Co., Inc. | 250 |
| **Oct. 2. By "Tuscania," London.** | |
| Bierrie & Co., Inc. | 1,924 |
| Poel & Kelly, Inc. | 2,059 |
| **Oct. 4. By "Korea Maru," Far East.** | |
| The Meyer & Brown Corp. | †125 |
| **Oct. 4. By "Silverlarch," Far East.** | |
| Robert Badenhop Corp.....pkgs. | †408 |
| The Meyer & Brown Corp. | †427 |
| H. Muehlstein & Co., Inc. | †700 |
| Rogers Brown & Crocker Bros., Inc. | 400 |
| **Oct. 4. By "Walton Hall," Far East.** | |
| Haldane & Co., Inc. | 168 |
| Lavino American & Asiatic Co. | 144 |
| **Oct. 5. By "Garoet," Far East.** | |
| H. A. Astlett & Co. | †266 |
| General Rubber Co. | 230 |
| The Meyer & Brown Corp. | †250 |
| **Oct. 5. By "Rotterdam," Far East.** | |
| General Rubber Co. | 669 |
| **Oct. 7. By "London Exchange," London.** | |
| Baird Rubber & Trading Co., Inc. | 261 |
| Littlejohn & Co., Inc. | 358 |
| The Meyer & Brown Corp. | 2,353 |
| **Oct. 7. By "Pres. McKinley," Far East.** | |
| H. A. Astlett & Co. | 100 |
| Robert Badenhop Corp.....pkgs. | †440 |
| Littlejohn & Co., Inc. | †1,910 |
| Poel & Kelly, Inc. | †500 |
| **Oct. 8. By "Carmania," London.** | |
| Robert Badenhop Corp. | 250 |
| Bierrie & Co., Inc. | 162 |
| Littlejohn & Co., Inc. | 402 |
| Poel & Kelly, Inc. | 550 |
| Chas. T. Wilson Co., Inc. | 564 |
| **Oct. 8. By "Matra," Far East.** | |
| General Rubber Co. | 1,260 |
| **Oct. 9. By "American Farmer," Far East.** | |
| General Rubber Co. | 489 |
| **Oct. 9. By "Egremont," Far East.** | |
| General Rubber Co. | 840 |
| Lavino American & Asiatic Co. | 168 |
| Rogers Brown & Crocker Bros., Inc. | 100 |
| **Oct. 9. By "Minnesota," London.** | |
| Robert Badenhop Corp. | 214 |
| Baird Rubber & Trading Co., Inc. | 1,118 |
| Bierrie & Co., Inc. | 256 |
| General Rubber Co. | 50 |
| Littlejohn & Co., Inc. | 1,614 |
| The Meyer & Brown Corp. | 680 |
| Poel & Kelly, Inc. | 1,030 |
| Rogers Brown & Crocker Bros., Inc. | 536 |
| Chas. T. Wilson Co., Inc. | 311 |
| **Oct. 9. By "Scythia," London.** | |
| Rogers Brown & Crocker Bros., Inc. | 130 |
| **Oct. 10. By "Olympic," Europe.** | |
| N. Diamond & Co., Inc. | 33 |
| **Oct. 11. By "Steel Traveller," Far East.** | |
| Robert Badenhop Corp.....pkgs. | 501 |
| N. Diamond & Co., Inc. | 250 |
| General Rubber Co. | 7,382 |
| Haldane & Co., Inc. | 376 |
| Hood Rubber Co. | 127 |
| Lavino American & Asiatic Co. | 892 |
| Littlejohn & Co., Inc. | 1,094 |
| The Meyer & Brown Corp. | 408 |
| H. Muehlstein & Co., Inc. | 250 |
| Poel & Kelly, Inc. | 500 |
| Rogers Brown & Crocker Bros., Inc. | 228 |
| Chas. T. Wilson Co., Inc. | 266 |

*Arrived at Boston.
†Arrived at Los Angeles.

| | Cases |
|---|---|
| Oct. 13. By "Nortonian," London. | |
| Baird Rubber & Trading Co., Inc. | *254 |
| Littlejohn & Co., Inc. | 298 |
| Oct. 15. By "Minnetonka," London. | |
| Robert Badenhop Corp. | 150 |
| Bierrie & Co., Inc. | 115 |
| Littlejohn & Co., Inc. | 250 |
| Rogers Brown & Crocker Bros., Inc. | 75 |
| Oct. 15. By "Simaloer," Far East. | |
| Baird Rubber & Trading Co., Inc. | 76 |
| Bierrie & Co., Inc. | 351 |
| N. Diamond & Co., Inc. | 300 |
| Lavino American & Asiatic Co. | 670 |
| Littlejohn & Co., Inc. | 1,613 |
| H. Muehlstein & Co., Inc. | 280 |
| Rogers Brown & Crocker Bros., Inc. | 213 |
| Rogers Brown & Crocker Bros., Inc. | *50 |
| Chas. T. Wilson Co., Inc. | 423 |

| | Cases |
|---|---|
| Oct. 15. By "Franconia," Liverpool. | |
| Bierrie & Co., Inc. | 137 |

## Africans

| | |
|---|---|
| Sept. 17. By "Vancouver Maru," Europe. | |
| Littlejohn & Co., Inc. | 216 |
| Sept. 19. By "Pipestone City," London. | |
| Hood Rubber Co. | *2,791 |
| Sept. 21. By "Veendam," Europe. | |
| Littlejohn & Co., Inc. | 91 |
| Oct. 4. By "McKeesport," London. | |
| Lavino American & Asiatic Co. | 100 |
| Oct. 15. By "Rotterdam," Far East. | |
| N. Diamond & Co., Inc. casks | 34 |

## Balata

| | Cases |
|---|---|
| Sept. 22. By "Matura," Demerara. | |
| Middleton & Co., Ltd. bales | 27 |
| Sept. 25. By "Basil," Peru. | |
| Paul Bertuch & Co., Inc. bales | 53 |
| Oct. 10. By "Justin," Peru. | |
| Paul Bertuch & Co., Inc. bales | 67 |

## Rubber Latex

| | |
|---|---|
| Sept. 25. By "Silverbelle," Far East. | |
| General Rubber Co. gal. | 139,931 |
| Oct. 2. By "Pres. Harrison," Far East. | |
| Rogers Brown & Crocker Bros., Inc. gal. | *700 |
| Oct. 11. By "Steel Traveller," Far East. | |
| General Rubber Co. gal. | 65,817 |

## Paras and Caucho

| | Fine Cases | Medium Cases | Coarse Cases | Caucho Cases | Miscel. Cases |
|---|---|---|---|---|---|
| Sept. 20. By "Sheridan," South America. | | | | | |
| H. A. Astlett & Co. | 25 | ... | 49 | 10 | ... |
| Paul Bertuch & Co., Inc. | 274 | ... | 4 | ... | ... |
| General Rubber Co. | 659 | 4 | 142 | 18 | *3 |
| Littlejohn & Co., Inc. | 223 | ... | ... | 35 | ... |
| The Meyer & Brown Corp. | 393 | ... | ... | 163 | ... |
| Sept. 28. By "Basil," South America. | | | | | |
| H. A. Astlett & Co. | 82 | ... | 19 | 12 | ... |
| General Rubber Co. | 32 | ... | 18 | ... | ... |
| The Meyer & Brown Corp. | 125 | ... | ... | ... | ... |
| Oct. 5. By "Barreado," South America. | | | | | |
| H. A. Astlett & Co. | ... | ... | 119 | 73 | ... |
| The Meyer & Brown Corp. | 61 | ... | ... | ... | ... |
| Oct. 11. By "Justin," South America. | | | | | |
| Paul Bertuch & Co., Inc. | 373 | ... | ... | ... | ... |
| General Rubber Co. | 498 | ... | 72 | 46 | *2 |
| Littlejohn & Co., Inc. | 699 | ... | 47 | 30 | ... |
| The Meyer & Brown Corp. | 434 | ... | ... | ... | ... |

*Mixed.

## United States Crude and Waste Rubber Imports for 1928 by Months

| | Plantations | Paras | Africans | Centrals | Guayule | Manicobas and Matto Grosso | Total 1928 | Total 1927 | Balata | Miscellaneous | Waste |
|---|---|---|---|---|---|---|---|---|---|---|---|
| January ..... tons | 43,668 | 1,580 | 433 | 126 | 435 | 1 | 46,243 | 45,827 | 120 | 1,292 | 248 |
| February | 27,852 | 756 | 125 | 125 | 587 | .. | 29,445 | 27,701 | 58 | 517 | 310 |
| March | 37,545 | 2,430 | 72 | 92 | 755 | .. | 40,894 | 35,054 | 154 | 741 | 830 |
| April | 36,108 | 573 | 15 | 20 | 524 | .. | 37,240 | 48,632 | 202 | 888 | 18 |
| May | 31,564 | 849 | 14 | 5 | 451 | .. | 32,883 | 36,285 | 71 | 923 | 142 |
| June | 24,752 | 582 | 25 | 9 | 424 | .. | 25,792 | 33,142 | 14 | 727 | 165 |
| July | 32,536 | 585 | 11 | 62 | 188 | .. | 33,382 | 38,416 | 108 | 895 | 33 |
| August | 28,675 | 1,010 | 105 | 15 | ... | .. | 29,805 | 32,804 | 62 | 775 | 219 |
| September | 45,663 | 731 | 262 | 6 | ... | .. | 46,662 | 32,810 | 107 | 961 | 109 |
| Total, nine months, 1928 ..... tons | 308,363 | 9,096 | 1,062 | 460 | 3,363 | 1 | 322,346 | ..... | 896 | 7,719 | 2,074 |
| Total, nine months, 1927 ..... tons | 311,427 | 12,947 | 1,477 | 1,094 | 3,696 | 30 | ..... | 330,671 | 700 | 9,957 | 4,605 |

*Compiled from statistics supplied by the Rubber Association of America, Inc.*

## Ceylon Rubber Exports

**January 1 to August 15, 1928**

| | Tons |
|---|---|
| To United Kingdom | 7,687.26 |
| Continent | 2,426.69 |
| Australia | 483.03 |
| America | 18,784.55 |
| Egypt | 9.00 |
| Africa | 15.55 |
| India | 12.94 |
| Japan | 69.83 |
| Other countries in Asia | 5.15 |
| Total | 29,494.00 |
| For the same period last year | 34,063.07 |

**Annual Exports, 1921-1927**

| | Tons |
|---|---|
| For the year 1927 | 55,355.77 |
| 1926 | 58,799.56 |
| 1925 | 45,697.19 |
| 1924 | 37,351.13 |
| 1923 | 37,111.88 |
| 1922 | 47,367.14 |
| 1921 | 40,210.31 |

## Paraffin as Rubber Preservative

Paraffin has often been suggested as an effective coating for checking the perishing of rubber goods through exposure to air and sunlight, yet it still appears to be used but sparingly. Perhaps the reason why such preservative has not found more favor is that a satisfactory technique for its application has not been generally known, or because of fear as to an adverse effect on some kinds of rubber goods; although it is held that proper application of such anti-oxidant treatment does not alter resilience or tensile strength to any appreciable extent. The general process appears to require the heating of rubber products above 190° F. for some hours in order to dry them and make their surfaces more porous and absorbent. The articles are then immersed for a few minutes in the paraffin, liquified with heat, and, if desired, they are wiped before cooling to remove excess of the waxy material.

## United States Imports of Crude Rubber and Liquid Latex—By Countries

*August, 1928

| | Crude Rubber Pounds | Crude Rubber Value | Liquid Latex Pounds† | Liquid Latex Value |
|---|---|---|---|---|
| Belgium | 217,590 | $24,690 | ..... | ..... |
| France | 640,434 | 111,393 | ..... | ..... |
| Germany | 282,260 | 53,033 | ..... | ..... |
| Netherlands | 159,024 | 28,711 | ..... | ..... |
| United Kingdom | 8,177,762 | 1,553,628 | 160 | $37 |
| Canada | 47,680 | 8,624 | ..... | ..... |
| Costa Rica | 1,444 | 606 | ..... | ..... |
| Nicaragua | 2,956 | 621 | ..... | ..... |
| Panama | 9,219 | 1,844 | ..... | ..... |
| Brazil | 2,273,509 | 397,288 | 110,230 | 20,996 |
| Colombia | 6,721 | 1,057 | ..... | ..... |
| Ecuador | 4,730 | 2,390 | ..... | ..... |
| Paraguay | 22,344 | 3,948 | ..... | ..... |
| Uruguay | 17,088 | 4,226 | ..... | ..... |
| British India | 47,040 | 17,704 | ..... | ..... |
| British Malaya | 35,405,947 | 6,301,222 | 216,201 | 46,792 |
| Ceylon | 7,969,640 | 1,383,374 | ..... | ..... |
| Java and Madura | 7,454,198 | 1,539,650 | ..... | ..... |
| Other Netherland East Indies | 5,687,466 | 1,148,018 | 287,550 | 63,171 |
| Australia | 4,320 | 1,051 | ..... | ..... |
| British Oceania | 32,295 | 7,237 | ..... | ..... |
| Liberia | 79,197 | 9,261 | ..... | ..... |
| Total | 68,542,864 | $12,599,576 | 614,141 | $130,996 |
| Long tons | 30,600 | ..... | 274 | ..... |

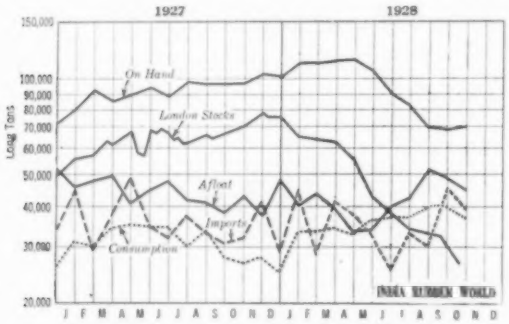
*There were no imports of guayule rubber from Mexico during August, 1928. Total rubber imports amounted to 30,874 long tons.

†Pounds of dry rubber contained in latex imported; crude rubber content is taken as three pounds per gallon of latex.

A JOINT MEETING OF THE SOCIETY OF CHEMICAL INDUSTRY, American Chemical Society, Societe de Chimie Industrielle and American Electrochemical Society will be held November 2 at the Chemists Club, New York. An informal dinner at 7:00 p. m. will precede the meeting.

# Imports, Consumption and Stocks

The accompanying graph covers crude rubber importations, consumption and stocks for 1927 and the first 10 months of 1928. Stocks on hand September 30 were 68,881 tons, a decrease of




**U. S. Imports, Consumption and Stocks**

2,119 tons below the estimate as made August 31. Consumption during September was 39,882 tons. This is next to the heaviest consumption of any month thus far this year, being 3,043 tons below that record. The estimated consumption for October is placed at 37,000 tons in anticipation of a possible decrease in tire and tube output.

London stocks decreased between September 22 and October 20, on the former date being 31,884 tons and on the latter 26,477, a decrease of 5,407 tons.

**UNITED STATES CRUDE RUBBER IMPORTS, CONSUMPTION AND STOCKS**

| Twelve Months | Imports Tons | Consumption Tons | Stocks: On Hand Tons | Stocks: Afloat Tons | London Tons | Singapore and Penang Tons |
|---|---|---|---|---|---|---|
| 1925 | 384,837 | 389,136 | 51,000* | 48,000* | ..... | ..... |
| 1926 | 411,900 | 366,140 | 72,510* | 52,019* | ..... | ..... |
| 1927 | 426,258 | 370,915 | 100,130* | 47,939* | 63,207* | 25,868* |
| 1928 | | | | | | |
| January | 46,200 | 34,403 | 110,114 | 41,256 | 66,285 | 25,868 |
| February | 29,445 | 33,703 | 108,955 | 43,316 | 62,500 | 22,867 |
| March | 40,894 | 35,688 | 114,061 | 39,324 | 61,000 | 20,538 |
| April | 37,240 | 32,779 | 113,800 | 33,986 | 55,000 | 16,946 |
| May | 32,883 | 37,333 | 105,356 | 34,374 | 43,716 | 17,687 |
| June | 25,792 | 37,676 | 90,189 | 40,000 | 35,248 | 18,207 |
| July | 33,382 | 37,407 | 83,242 | 42,304 | 35,445 | 18,663 |
| August | 29,805 | 42,925 | 68,994 | 51,875 | 31,884 | 18,971 |
| September | 46,662 | 39,882 | 68,881 | 48,566 | 20,477†† | 14,898 |
| Oct. (est.) | 39,000 | 37,000 | 70,000 | 45,000 | ..... | ..... |

*December 31.
††October 20.
The 1928 figures, unless otherwise specified, are all as of the first of each month.

## Phase Roles in Vulcanization

According to a theory of M. Combet and L. Millet, in optimum vulcanization the sulphur atom combines with the inner or highly-polymerized (and perhaps crystallo-colloidal) alpha phase of the rubber particle, forming therewith a stable compound, and improving the mechanical properties without affecting the initial flexibility of the rubber. The beta phase, or enveloping, protective, and more or less firm coating of the more plastic alpha phase, and which is of a lower polymerization and has the ordinary colloidal structure, yields to the union of sulphur with the alpha phase. When unvulcanized rubber ages the alpha phase is depolymerized and converted into the beta, which resinifies, its protection having been broken down. In overcured rubber not only is the alpha phase all converted to alpha-sulphur, but part or all of the beta becomes beta-sulphur, which is less stable than the former, and which explains the presence of free sulphur regardless of the amount added to a rubber mixture. To such combination of the beta phase with sulphur is also attributed loss of elasticity.

## World Rubber Production—Net Exports

Long Tons—1928

| British Malaya: | March | April | May | June | July | Aug. | Sept. |
|---|---|---|---|---|---|---|---|
| Gross exports | 27,813 | 20,029 | 26,403 | 22,930 | 30,405 | 35,593 | 29,700 |
| Imports | 10,508 | 9,335 | 10,350 | 16,168 | 13,383 | 15,114 | 11,239 |
| Net | 17,305 | 10,694 | 16,053 | 6,762 | 17,022 | 20,479 | 18,461 |
| Ceylon | 3,460 | 3,460 | 3,125 | 3,125 | 4,798 | 5,580 | 4,687 |
| India and Burma | 775 | 789 | 654 | 963 | 1,043 | 398 | ..... |
| Sarawak | 645 | 630 | 842 | 926 | 905 | 1,227 | 938 |
| B. N. Borneo | 581 | *500 | *500 | *500 | *500 | *500 | *500 |
| Siam | 269 | 258 | 241 | 451 | 366 | 544 | 447 |
| Java and Madura | 3,999 | 3,993 | 4,943 | 5,419 | 5,602 | 5,668 | ..... |
| Sumatra East Coast | 5,826 | 5,040 | 5,355 | 5,863 | 7,566 | 7,438 | ..... |
| Other N. E. Indies | 9,690 | 5,538 | 10,382 | 13,623 | 11,424 | 11,798 | ..... |
| French Indo-China | 613 | 518 | 619 | 902 | 744 | 779 | 1,112 |
| Amazon Valley | 2,750 | 1,014 | 2,062 | 1,399 | 1,264 | 1,732 | 1,614 |
| Other America | 204 | 239 | 51 | 57 | 101 | ..... | ..... |
| Mexican Guayule | 575 | 512 | 452 | 424 | 192 | ..... | ..... |
| Africa | 432 | 572 | 623 | 479 | ..... | ..... | ..... |
| Total | 47,124 | 33,757 | 45,902 | 40,893 | ..... | ..... | ..... |

*Estimated.
*Compiled by Rubber Division, Department of Commerce, Washington, D. C.*

## World Rubber Absorption—Net Imports

Long Tons—1928

| | Feb. | March | April | May | June | July | Aug. |
|---|---|---|---|---|---|---|---|
| Australia | 616 | 918 | 832 | 655 | 348 | 591 | 707 |
| Belgium | 599 | 816 | 575 | 746 | 743 | 895 | 519 |
| Canada | 2,553 | 2,989 | 1,938 | 2,180 | 2,632 | 2,692 | 2,447 |
| Czechoslovakia | 297 | 398 | 159 | 213 | 182 | 384 | ..... |
| Denmark | 43 | 33 | 23 | 61 | 28 | 35 | 47 |
| Finland | 48 | 78 | 63 | 71 | 58 | 50 | 59 |
| France | 2,526 | 1,902 | 2,204 | 3,210 | 4,550 | 2,652 | ..... |
| Germany | 2,984 | 3,521 | 2,719 | 2,944 | 2,968 | 3,387 | 2,744 |
| Italy | 437 | 763 | 1,115 | 1,095 | 984 | ..... | ..... |
| Japan | 1,258 | 1,707 | 2,353 | 2,306 | 2,119 | 2,042 | ..... |
| Netherlands | 98 | 95 | 280 | 209 | 133 | 395 | 316 |
| Norway | 67 | 56 | 60 | 82 | 33 | ..... | ..... |
| Russia | 159 | 1,468 | 926 | 744 | 710 | 660 | ..... |
| Spain | 296 | 497 | 304 | 220 | 251 | 175 | ..... |
| Sweden | 149 | 184 | 193 | 271 | 227 | 177 | 220 |
| United Kingdom | 3,143 | 3,179 | *2,280 | *5,325 | *3,031 | *1,374 | 48 |
| United States | 30,926 | 36,970 | 35,686 | 28,659 | 25,143 | 28,170 | 28,497 |
| U. S. (Guayule) | 489 | 575 | 512 | 452 | 424 | 192 | ..... |
| Total | 46,688 | 56,149 | 52,222 | 49,443 | 44,564 | ..... | ..... |

* Excess of Re-exports over Imports.
*Compiled by Rubber Division, Department of Commerce, Washington, D. C.*

## Netherland East Indies Exports

Long Tons—1928

| | Jan. | Feb. | March | April | May | June | Total Jan.-June 1927 | Total Jan.-June 1928 |
|---|---|---|---|---|---|---|---|---|
| Java & Madura | 4,870 | 4,061 | 4,017 | 3,993 | 4,960 | 5,447 | 28,825 | 27,348 |
| Sumatra E. C. | 7,984 | 6,756 | 5,900 | 5,273 | 5,564 | 6,104 | 36,817 | 37,581 |
| Other N. E. I.* | | | | | | | | |
| Atjeh & Dep. | 374 | 300 | 404 | 201 | 332 | 331 | 1,854 | 1,942 |
| Riouw & Dep. | 823 | 772 | 624 | 467 | 981 | 765 | 5,519 | 4,432 |
| Djambi | 2,588 | 2,442 | 2,799 | 1,686 | 3,606 | 5,921 | 15,610 | 19,042 |
| Palembang | 2,195 | 1,277 | 1,263 | 476 | 1,340 | 1,950 | 10,524 | 8,501 |
| Lampongs | 210 | 214 | 309 | 200 | 275 | 253 | 1,372 | 1,461 |
| Benkoelen | 4 | 2 | 3 | 6 | 3 | 5 | 39 | 23 |
| Sumatra W. C. | 197 | 154 | 117 | 42 | 28 | 38 | 797 | 576 |
| Tapancelo | 594 | 434 | 412 | 343 | 417 | 394 | 3,866 | 2,594 |
| Banka & Dep. | 121 | 93 | 41 | 30 | 37 | 42 | 1,192 | 364 |
| Billiton | 14 | 11 | 9 | 3 | 2 | 4 | 86 | 43 |
| W. Bor. | 1,883 | 1,167 | 1,553 | 669 | 1,662 | 1,999 | 12,911 | 8,933 |
| S. & E. Bor. | 2,756 | 1,749 | 2,133 | 1,355 | 1,726 | 1,930 | 12,822 | 11,649 |
| Menado | 19 | 19 | 12 | 17 | 16 | 15 | 89 | 98 |
| Celebes & Dep. | 1 | 2 | 8 | 5 | 2 | 2 | 4 | 20 |
| Amboina | 5 | 2 | 3 | 3 | 1 | 2 | 24 | 16 |
| Total* | 11,784 | 8,638 | 9,690 | 5,503 | 10,428 | 13,651 | 66,709 | 59,694 |
| Grand total | 24,638 | 19,455 | 19,607 | 14,769 | 20,952 | 25,202 | 132,351 | 124,623 |

* Exports from "Other N. E. I." consist mostly of native rubber of approximately 33⅓ per cent necessary for moisture.
*Compiled by Rubber Division, Department of Commerce, Washington, D. C.*

## A Sabbatarian Restriction Plan

Inasmuch as their government is about to let supply and demand come into play once more, and despairing of getting Dutch rubber growers to restrict exports in any way so as to stiffen prices, some Malayan planters are advocating what they deem an unobjectionable scheme for automatically lifting the industry from the "slough of despond." They would stop all Sunday work, thus reducing output by about 14 per cent, and presumably rubber prices would bound upward in the same proportion. A hitch, however, comes in dealing with the coolies. Their leaders fear that if they do not spend Sunday tapping trees they may spend that day tapping something else and be unfit for work on Monday. Then, too, their own religions prescribe other days for devotional duties, and they could not afford to lose any more time or wages; and as for their health, about which the "plan" advocates claim to be solicitous, the coolies seem to be willing to take a chance on that without any more days of enforced rest.